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ART. I.—*Third Report on Tenasserim—the surrounding Nations, —Inhabitants, Natives and Foreigners—Character, Morals and Religion.*—By JOHN WILLIAM HELFER, M. D.

Position of the Tenasserim Provinces.—The Tenasserim Provinces, excepting the Malay countries of Province Wellesley, Malacca; and Singapore, are the only isolated British possessions in India.

They are surrounded by the bay of Bengal, (hitherto the only road of communication), and by foreign states. The river Salween divides them from the Burmese kingdom of Pegu towards the north-west; the river Thounyee from the Shan states of Zimmay, Laboung, and Yaihaing towards the north; the range of mountains running from north to south through the whole Malay peninsula from the kingdom of Siam to the east; the river Packchan from the Siamo-Malay states to the south; the bay of Bengal and the Nicobar and Andaman islands front their west side.

Surrounding nations.—The nations which encircle the provinces are, therefore, the two rival nations of Burmah and Siam, possessing a tolerably consolidated, established, and regulated government, the tributary and dependent Siamo-Malays, and the Burmah Shans, the half savage Nicobarians, and the Andamanese cannibals.

The Burmese possessions incorporated with British India.—The Tenasserim Provinces have been incorporated with the British empire in the east, in consequence of the war with Burmah in 1824-25. For the purpose of weakening that insolent and ignorant power, Assam, Arracan, and the Tenasserim Provinces were wrested from it.

Extent of Tenasserim.—The Tenasserim Provinces consist of a part of Martaban (now Province Amherst, formerly belonging to Pegu) and the districts of Ye, Tavoy, Mergui, and Tenasserim.

Motives for occupying Tenasserim.—There seems to have been no secondary motive for retaining these provinces, beyond their affording facilities to command the bay of Bengal; they could not have then held out any other apparent, known allurement.

Present relations with Burmah.—The misapplied generosity of the British, left their Burmah foes in possession of the most productive and important part of the empire. This generosity has been misconstrued into weakness, or inability to retain the conquest; which prevailing opinion has acquired greater strength since the usurpation of the present ruler, and this opinion, strengthened by the peaceable policy of the British Indian Government in this quarter, is the reason of the insolence of the present ruler of Burmah.

Formerly prevailing opinion of the Burmah power.—Formerly when all intercourse with Burmah was either cut off entirely to Europeans, or when the notices of the embassies of the British government sent to Ava could be but imperfect, on account of their always proceeding the same way by water, up the Irrawaddy to the capital, the power and population, the resources and abilities of this empire were greatly exaggerated.

Now corrected.—Since that time, our knowledge of it has greatly increased; the war laid the lower country open to investigation; and since the conclusion of the treaty of Yandaboo, several able British gentlemen have traversed the empire in different directions, and the conclusion drawn from personal experience has been, that Burmah could only rank in political importance with second rate Indian powers. It was found out, that the population formerly estimated at 17 millions of inhabitants, could not be reckoned at more than 3 or 4 millions scattered over a wide extent of country—that part of the population was tributary to the ruler—that, if that prince, be inclined to hostilities, he can but raise a kind of temporary militia, not exceeding at the utmost, 70 or 80,000 men—that a permanent disciplined soldiery does not exist—that great part of this militia must be in a sad plight after a few months' campaign, placed opposite a disciplined army, commanded by Europeans, on account of want of ammunition, clothing, food, &c. &c.—that most of these men are peasants, driven from their homes by force to fight the enemy—that few of them know even to handle their arms—and that none of them are able to fight a British Indian army in the open field.

Erroneous opinions of the people.—In the same manner in which the abilities of the ruling power were misrepresented, an erroneous opinion was also formed of the character of the inhabitants.

Equally corrected.—Instead of finding the mass of the population *brute warriors*, they are in fact a harmless, naturally mild race of husbandmen, oppressed by a highly tyrannical absolutism.

Reasons of their military excursions.—The love of sudden gain, and that (to every nation) inordinate desire after adventures, carried them, under the lead of ambitious men in power, from time to time to invasions of surrounding states, and rendered them chiefly under the founder of the present dynasty, Alompra, in the last century, a conquering nation. Yet they were destitute of the roaming ferocity of the Tartars, or the bloody propensity of the Arabs, and of the personal courage of both. The mass engaged in such expeditions, after a few months devastation and plundering, returned to their homes to labour in the fields; and a small part of them continued robbers even in their own country, often not discouraged by their own government, perhaps, with a view of conserving in them the stock and spirit of soldiery, useful for future enterprizes.

An exaggerated military reputation.—The dread of surrounding, unsettled, petty nations, the never decided superiority between them and the Siamese, their succeeding even in defeating a Chinese army, nurtured in them a persuasion of their invincibility; the boasting of their blinded adulating courtiers, the ignorance of the true state of the country—a *terra incognita* to Europeans—all this contributed to create a high opinion of their power, and consequently an erroneous belief of danger to British India, until their own signal defeat in the last war, followed by the first dismemberment of their empire, destroyed this delusion.

Other neighbours.—*Shans.*—The neighbours to the north, the tributary Shan states of Zimmay, Laboung, and Yaihaing, are equally an agricultural race of people, the nature of their mountainous sub-alpine country induces them also to partly follow the pursuits of pastoral tribes. They appear to be weak clans, and profess to detest the Burmese, but are too insignificant to become independent; they have hitherto manifested a spirit of amity towards the British, and have shewn themselves anxious to be allowed to throw themselves under their protection.

Siamese.—The kingdom of Siam, fronting the Tenasserim provinces towards the east, is established upon the same foundations which are in these parts universally acknowledged and adopted. The government

is likewise an uncontrolled, sometimes very rigorous, absolutism; yet it appears Siam is advanced one step farther in civilization than Burmah, for its ruler not only protects agriculture, but encourages commerce; its inhabitants are undoubtedly more industrious, and in consequence, their country more wealthy. The fertility of the great valley and of the plains formed by the delta of the Meram river, is highly spoken of. The great number of Chinese settled amongst them has doubtless contributed to establish a more general and improved cultivation. The custom prevailing to this day of driving the population of whole districts, when conquered, to remote parts; forcing them to cultivate the ground, though in itself for the depopulated countries highly pernicious, seems to indicate that the government knows duly to appreciate the value of the labour of husbandmen. Though no positive data of the whole amount of the revenue are known, yet it must be, judging only from the duties levied at Bankouk, at least double that of the Burman empire.

The feelings of the court of Bankouk, manifested towards the British Government of India, have been hitherto those of amity and good-will. These feelings are dictated partly by apprehension for their own safety, partly by their hereditary enmity towards the Burmese; they viewing the British as the natural enemies of that nation. The Burmese and Siamese have been for a long time rivals, and in consequence, never friends. The weakening the Burmese gave additional strength to the Siamese. Before the British war with Burmah, neither of the two powers, though almost uninterruptedly engaged in petty warfare, could subdue the other; their military force and prowess being equal.

Their mode of warfare was confined in latter times to temporary invasions, accompanied by mutual devastations, generally to both parties equally injurious. The consequence was, that the confines of the two powers have been rendered a waste, and hence it is accounted for that the frontiers of the Tenasserim provinces towards Siam are totally uninhabited, desolate, uninterrupted forests, from thirty to eighty miles in breadth.

It appears from the late accounts of Dr. Richardson, that the high opinion which the court of Bankouk had conceived of the British power, and which they knew only to measure by the progress of British arms in the last war, has somewhat diminished, within the last two years. With the returning belief of their own strength, and diminishing apprehension of their new neighbours, the feelings of amity, and the desire of mutual peace, will be lessened.

The Siamo-Malays.—The Siamese are conquerors in the Malay peninsula. The petty states to the south of the Tenasserim provinces (whose boundary is formed by the Pakchan river disemboing in lat. $9^{\circ} 57'$) are under Siamese dominion. The races inhabiting it are mixed. Those in the neighbourhood of the Tenasserim provinces are either Siamese, or formerly captured Burmese, or people from the eastern frontier of Siam, besides others forcibly transplanted from other parts. The people lower down the peninsula are half Siamese and half Malays; and nearer to the extremity of the peninsula, of pure Malay origin. It seems that the Siamese government exercises in these provinces a much more severe absolutism than within the proper limits of Siam, and consequently it is proportionably more hated.

Malays.—The Tenasserim provinces have no intermediate intercourse with the Malays, except with some few people of this race, who have farmed the edible birds' nest caves in the Mergui archipelago, from government.

Nicobarians.—The people of the Nicobars, apparently the offspring of a mixture of surrounding nations, wrecked or dispersed accidentally on the islands, are totally insignificant in a political point of view.

There exist some relations between the Burmese of the Tenasserim provinces and these islanders, with whom a trade of exchange is carried on. The Nicobarians furnish ship loads of cocoanuts which they barter with the Burmese for cloth, tobacco, iron, and earthenware. They must be called independent at present, for though the Danes endeavoured repeatedly to take possession of some of the islands, at present not a vestige is to be found either of their establishment or of their authority.

Andamanese.—To finish the enumeration of the nations bordering on the Tenasserim provinces, mention must be made of the Andamanese, perhaps the lowest beings in the scale of civilization belonging to the human species. They are of the negro variety with woolly curly hair, of a diminutive stature, almost untameable, even when caught young, living upon trees, or under a shed of peeled bark, or in the crevices of mountains, subsisting upon the spontaneous produce of nature; their chief food consists of shell-fish, collected on the sea-shore. They are reported to be cannibals. No nation has yet succeeded in forming a friendly alliance with them, they considering every stranger an enemy, whom if it be practicable they kill, and in retaliation are destroyed by every stranger without compunction, whenever accident brings them in contact.

The interior of these large and interesting islands is entirely unexplored. The sea-shore is visited by the Burmese inhabitants of Tenasserim and the Malays, for the purpose of collecting sea-slugs, and edible birds' nests. These occasional visitors have no intercourse with the savage inhabitants, and live during the season of collection either in their boats, or build a sort of temporary stockade for their defence.

Notwithstanding the favourable situation of these islands in the bay of Bengal, notwithstanding the beautiful harbour of Port Cornwallis, the attempt to form an establishment there, made several times by the English for the sake of a military and commercial dépôt, has been given up entirely.

The Dutch.—The Dutch is the only European power which has possessions in the post-Asiatic countries, besides the British (if the Philippine islands be excepted.) However not only their vicinity, but even their very existence is unknown to the people of Tenasserim; there is no intercourse, no communication whatever with their ports, and I believe that not a Dutch vessel has even approached the coast of the territory since its occupation by the British.

The French.—Some old inhabitants remember the French. In the last war, their fleets had for a time their station in King's Island Bay, for the purpose of intercepting the Indiamen trading to China; and their rendezvous place, as well as the rivulet from whence they supplied their ships with water, were pointed out to me by the Burmese. The French however never ventured upon an inland excursion, and the inhabitants then having scarcely any notion of the existence of Englishmen, could of course have no suspicion of the relations which existed between the two nations.

Intercourse with the Chinese.—Though a number of Chinese are settled in the provinces as merchants, yet there is no intercourse directly with China either by land or water. A caravan from the Chinese province of Yunan approached last year within fifteen to twenty days' march from Maulmain, and intended to penetrate as far as that settlement, for the purpose of trading; however, jealousy, and apprehension in general, as well as the then already manifest inimical intentions of the Burmese usurper, prevented those enterprising men from accomplishing their purpose. A considerable loss to them it is said was the consequence, and probably no other attempt will be made on their part, until the relations with the petty states to the north, through whose territories the Chinese have to pass, are based upon a more secure and solid foundation.

The different nations and tribes inhabiting the Tenasserim Pro-

vinces. Constant changes in Indo-China.—The stability of China Proper and Japan for so many centuries, forms a remarkable contrast to the constant and total changes which have happened in the adjoining countries comprised under the name of Indo-China, the constituent parts of which, are Cochin-China, Tonkin, Cambogia, Anjam or Loas, Siam, and Burmah. One race of people destroyed the other, and was again expelled and supplanted like the former, by subsequent conquerors. The kingdoms just mentioned as they exist at present, are erected upon the ruin of vanquished nations, whose history even, is frequently lost.

Alompra's Empire.—The territories of the Burmese empire had the same fate; and the present dynasty of Burmah is but of recent origin. Alompra, assisted by favourable circumstances, after many struggles, bloodshed, and devastation, finally overthrew Pegu, and established a new kingdom at Amarapura, carrying from thence his victorious arms over a wide extent of country.

History of Tenasserim.—The history of the Tenasserim provinces is involved in darkness. Who the first inhabitants were can scarcely even be guessed at, for it is not known who the inhabitants were four centuries ago. To judge from the Kareans inhabiting the interior, who seem to have outlived all revolutions of the successive conquests, and following analogy, whatever inhabitants there were they seem to have belonged to Mongolic races. Burmah as well as Siam and Cambogia, seem to have been originally peopled from the north, and it is very improbable that the inhabitants of Tenasserim were ever mixed with Malay blood. The comparatively late arrival of that race from Menamcaboo in Sumatra, in the Malay peninsula, in the districts of Jabor, Malacca, and Queda, where they formed colonies, is now almost universally adopted as a fact approaching to certainty, and if so, they had no time to disperse themselves towards the north.

Two hundred years ago the inhabitants seem to have been of Talian extraction, somewhat related to Siam; and Martaban is mentioned by the Portuguese as a place of great commercial importance; the town of Tenasserim was an important fortress. The provinces remained under Siamese dominion until the latter part of the eighteenth century, when Alompra, the conqueror, took possession of them; and notwithstanding the repeated contests and incursions of the Siamese, they remained a part of the Burman empire until they were incorporated with the British empire in the east, in the year 1826.

Change of population.—With new conquerors arrived new settlers. After Alompra's conquest the Siamese seem altogether to have with-

drawn, and to have been supplanted by the inhabitants of Burmah.

Forcible introduction of people.—In many cases the introduction of new inhabitants was forcibly effected; of this we have still a proof among the Burmese inhabitants of the village of Tenasserim. After the conquest and destruction of this once important town, the governors of the province intended to rebuild it. The Burmese however, transplanted to that place, were more than any others exposed to the continuing invasions of the Siamese, who used to carry every Burmese into slavery. The inhabitants returned therefore repeatedly to the sea-coast, and Mergui became in consequence the chief town of the province. To force however the inhabitants to remain at Tenasserim, a number of people, formerly runaways, were marked with a painted ring round their eyes, and an inscription upon their chests, and many of the older inhabitants of Mergui and Tenasserim are yet to be found with these indelible signs.

People now inhabiting Tenasserim.—The people now inhabiting the Tenasserim provinces, altogether in number not exceeding one hundred thousand, are Burmese, Talians, Siamese, Kareans, Seelongs, and foreigners.

1. *Burmese.*—The Burmese, the former conquerors and lords, are to this day the most numerous. Their chief seat was Martaban; the settlement of Mergui was the second in importance; Ye the third. Maulmain is of recent origin, sprung up since the occupation of the country by the British.

Situation of their villages.—All villages, hamlets, and even solitary plantations of the Burmese, are near the sea-coast, or on the banks of navigable rivers, or creeks. They never established themselves far inland, even since the time of their first settlement in the country.

Apprehensions of Siamese incursions, natural predilection for water, and the facilities of transporting themselves and their goods through a country where roads do not exist, and if they exist, are with great difficulty kept in order, will be found the reason.

2. *Talians—from whence.*—The Talians are the inhabitants of the kingdom of Pegu, formerly the lords of Burinah, now subdued, and the slaves of the Burmese, by whom they have been since that time always treated with severity and barbarity. The greatest part of the original country of this people consists of plains of fertile rice-ground; and from the disposition of the Talians it would seem that nature had marked them out for husbandmen, and especially rice planters.

Where settled.—From the great tracts of alluvion which the mighty Irawaddy deposited, and which its numerous branches now intersect, as well as from the banks of the Pegu and Sittary rivers, the Talians extended to the Salween, compelled as it seems to spread and to retire, on account of the oppression exercised by the little controled Burmese governors.

The province of Martaban, part of which is at present British, and comprised under the name of the Province of Amherst, was also inhabited by Talians, whence they seem to have spread from the banks of the Salween to the eastward, over the plains which are intersected by the waters of the Guin and Attaran. The mountain range to the east (now the frontier between Tenasserim and Siam) divided them from the river territories of the Menam, and appeared to form a barrier to their further extension from west to east.

Reasons of their migration towards the east.—But it seems the oppression of the Burmese in these districts, distant from the seat of government, must have been too severe to be borne; and forty thousand people expatriated themselves at once from the Province of Amherst into Siam, to exchange the yoke of Burmese rule for a milder despotism. When Amherst Province became British it was almost destitute of inhabitants.

Sensation and feelings of the Talians towards the British at the time of their first arrival.—At the commencement of the last Burmese war, the arrival of English soldiers in Pegu created an extraordinary sensation among the Peguans, the greater part of whom never before saw Europeans, who were represented to them as cannibals. When the first excitement subsided, and the people of Pegu had opportunities of perceiving that the foreign invaders were not only men like others, but much kinder enemies than they even thought compatible with the character of a soldier; they began to assist the British army, their hatred against their old oppressors broke out a fresh and they sincerely desired the total downfall of Burmese despotism.

The historian must regret to record, that conquered Pegu was again restored to the court of Ava, at the peace of Yandaboo. By this, these faithful allies were inconsiderately, and we may say mercilessly, delivered up again into the hands of their irreconcilable oppressors; an act, which they the least expected, as it was a notion incomprehensible to them, that a conqueror ever gives up voluntarily, what he once possessed indisputably. Many sought of course a refuge in the Tenasserim provinces, but many, chiefly those from distant parts, could not remove their families and goods in the first in-

stance, and were afterwards prevented from effecting their escape by the Burmese authorities. The cession of the kingdom of Pegu is the only reproach which this unfortunate race has to urge against the English.

Maulmain peopled by Talians.—The new settlement of Maulmain opposite to Martaban, now the capital of the Tenasserim provinces, was at first almost entirely peopled by Talians, and to this day it is computed that the number of Burmese to that of the Talians is in the proportion of one to twenty.

Obliteration of their distinguishing features.—The features of the Talians do not perceptibly distinguish them at present from the Burmese, the intermixture between the two races, which has taken place since many generations, has probably effaced or obliterated the distinguishing characteristics.

Existence of the Talian language.—That they are however a distinct people, is proved by their language, which they have preserved to this day, and which is said to have scarcely any resemblance to the Burmese. It is fast declining, and will probably cease to exist should the Talians continue to be subject to foreign powers, and there seems to be no probability of their again becoming an independent nation.

Burmese language generally adopted.—In British Tenasserim the Burmese language is adopted as the language of the courts, of public transactions, and of general conversation, which is but fair, as the majority of the inhabitants speak that language, and it is no grievance to the Talians, as two-thirds of them speak Burmese besides their mother tongue. The chief and almost sole occupation of the Talians is agriculture, and almost exclusively rice cultivation; they scarcely ever retire to the mountains, the amphibious life of a rice planter during six months of the year being to them the most congenial.

3. *Withdrawal of the Siamese from Tenasserim.*—Almost all the Siamese retired from these provinces after Alompra's conquest, except two villages to the south of Mergui, Boukpeen, and Lennya, where the Burmese had never resided; that part of the country, having always remained a disputed district.

From the time of the conquest, and probably before that time, Siamese and Burmese never met except as foes, and the system of alternate petty warfare, accompanied by kidnapping, plunder, and devastation, was carried on without intermission along the frontier districts, which in consequence, were soon transformed into a waste, and such they remain to this day. The Siamese seem to have been the

most dexterous in their plundering expeditions, and were, besides their greater daring, the most numerous ; for the Burmese in these provinces could only be considered as colonies, established partly by force, and kept up by dread.

Security established since the British occupation.—When security of person and property were established at the beginning of the British dominion, the Siamese government was given to understand that any such marauding excursions as were kept up under Burmese rule, would be considered as a breach of peace. The Siamese government released a number of people, about one thousand from Mergui Province, carried away during the last incursion, who were delivered up and returned to their homes.

The Siamese were of course permitted to come to the provinces on friendly terms. At first they were fearful, but when they perceived the difference between Burmese and English management, they gained confidence ; as the Burmese subjects once fled to Siam, to seek shelter under a milder yoke, so the Siamese now seek a refuge in Tenasserim.

New settlements of Siamese.—The Siamese population, consisting entirely of recent emigrants, increases, and there are settlements of these fugitives in several parts of the country ; their chief resort is the Province of Mergui, where they spread along the banks of the greater and lesser Tenasserim river.

Great difficulties it is said, are thrown in the way, on the part of the Siamese government, to prevent their migration. If caught, it is affirmed that decapitation is the inevitable consequence.

To reach the first British Tenasserim settlement, they have (besides the danger of being apprehended) great difficulties in passing through the pathless wilds ; whole families not unfrequently lose their way, erring for a month or more in the forests, reduced to the greatest extremities, living upon jungle-fruits, leaves, and barks, before they arrive near the sea-coast. It may be imagined that without these impediments, the influx of Siamese would be much greater than it is at present.

Their character.—The Siamese are an industrious, hardy race, and more enterprising than the Burmese, besides being easily manageable, quiet, obedient, and orderly. They would be, in greater numbers, a desirable accession in the wilds of Tenasserim.

They are the only people who have introduced the cultivation of the sugar-cane, for the purpose of making sugar ; of course as yet to such a limited extent, that it has not in any degree become important.

Many of them are huntsmen by profession, living for months in the wildest forests, where they shoot elephants for the ivory; they are also the trappers, tamers, and managers of elephants in general, to them in their own country the most important of domesticated animals; while in the Tenasserim provinces, under Burmese rule, elephant scarcely ever known tamed. The greatest part of the Siamese in the provinces approach more to the Malay than Chinese type in their features, which are generally very coarse, and their women very ugly, though both are generally well built, and taller than the Burmese. The huntsmen, particularly, are very nimble, sprightly, dexterous, and courageous; while the peaceful cottagers of the two settlements of Boukpeen and Lennya, which existed before the British occupation, are on the contrary dull. We cannot be allowed to judge of the Siamese as they appear in Tenasserim, for they were before they arrived the poorest class of depressed slaves, whom necessity only drove to seek a peaceable asylum. The more wealthy and favoured Siamese in the great delta or valley of Menam, and those towards the gulf of Cambogia, are said to be intellectually much advanced, and the great number of Chinese living among them, will have communicated to them more civilized manners, and improved modes of cultivation.

4. *The Kareans—their origin.*—The Kareans are the inhabitants of the longest standing in the provinces, who have survived the shocks of succeeding revolutions. Their origin cannot be traced. Some suppose them to be the aborigines of the country, some affirm they are the wreck of a great nation, fallen into dependence and slavery, expatriated and spreading afterwards over a wide extent of Indo-China, for they are found from the 11th to the 23rd degree of north latitude. The American missionaries, who are much interested about this people, are of opinion that they originally came from Thibet; the opinion seems however to rest only upon the congruity of names and some manners.

Their station.—Wherever they exist, they hold an inferior station in the country, excepting the so-called red Kareans to the north of Maulmain, who have resisted the Burmese influence,—they are mountaineers, subsisting upon prey and plunder.

The Kareans of the Tenasserim provinces, forming separate colonies, inhabit such parts as are unoccupied by any other inhabitants, which are the inland portions of the country; they there choose their abodes either on the banks of rivers or in secluded valleys. These communities do not generally consist of more than from three to twelve houses or families. As they have the custom of intermarriage, they are nearly related to each other. Soli-

tary huts of Kareans are often to be found in places where for many miles in circumference no other human being is to be found. They live exclusively upon the produce of the soil, planting mountain-rice, and some other indispensable articles, generally as much as they want for home consumption. Very rarely has a Karean a surplus, more frequently not sufficient to subsist upon.

Migration seems almost incompatible with the occupation of a husbandman, and is certainly a strange anomaly in a country highly productive; yet the Kareans subsist solely upon the produce of their plantations, and have no permanently fixed habitations.

Modes of cultivation.—When a Karean family has chosen a place for a plantation, huts of bamboo thatched with palm-leaves are constructed, and then a part of the forest is cleared, just as much as is necessary to plant the ground with rice, requisite to maintain the number of persons settled for a year. The paddy is sown upon the imperfectly burnt down forest, without any tillage or other preparation, and whatever else is wanted (cotton, indigo, sesam, vegetables, &c.) is promiscuously sown or planted on the same spot. The following year, another spot is cleared in the vicinity, and after some years, or when a death happens, the family removes to a greater distance, and begins again the highly laborious task of felling immense forest trees, visiting only from time to time the old establishment, which yet yields fruits surviving several seasons; and so the Karean wanders all his life time, without having settled permanently.

The reason for this extraordinary custom is differently accounted for. The Kareans say, that one and the same place does not produce rice for several years; an objection which is refuted by the example of other countries similarly situated, where new lands are not so abundant as here.

Others say, that there is greater trouble in keeping the ground clear from weeds, than to fell a new forest, which seems equally incredible. Probably the roaming propensity of the Kareans, and old established custom, are the chief reasons; to which must be added a great superstition and fear of *nâts* and evil spirits; such beings, having in their opinion, an allotted dominion over certain districts.

Whatever may be the origin of this extraordinary custom, certain it is, that the produce must be inferior; all perennial cultivation being in this way excluded, and gradual amelioration quite out of the question; hence it may be that the Kareans have remained always stationary, upon a low scale of civilization.

Their fate under the Burmese government.—Under the Burmese government the Kareans were depressed, and were liable to be called upon to do public works without remuneration, whenever it pleased the government.

This relation towards their masters exposing them to all kinds of vexations without hopes of redress, seems to have been the first reason of their retiring into seldom-visited, or sometimes inaccessible parts of the country, where they hoped to be beyond the immediate reach of their oppressors.

Though they have been placed on the same footing with the Burmese since the conquest of the country by the British, and enjoy at present formerly unknown rights and an impartial justice, yet they are still so timid that they can scarcely be prevailed upon to visit the towns on the sea-coast.

They have a language of their own, which has lately been drawn from its obscurity by the exertions of the missionaries, though they are without any communication with their brethren in Siam and Burmah, even confined sometimes as long as they live to the narrow sphere of their self-chosen district; yet it is affirmed that the Burmese Kareans bordering upon China, at a distant of 13° of latitude, speak a dialect of the same language which is current amongst the Kareans of Mergui Province.

5. *The Seelongs—their origin.*—These are again a variety of people different from all others just enumerated. They are the last in the scale of civilization, but not the least interesting.

The Seelongs are the inhabitants of the islands constituting the archipelago of Mergui, and are a race of wandering fishermen, building temporary huts of reeds, palm-leaves, and bamboos during the inclemency of the monsoon, and passing the rest of the year either in boats, or on the sea-beach under the shade of trees; they live upon the spontaneous productions of nature, but chiefly upon the produce of the sea; turtles, fish, and shell-fish forming the principal food.

They never cultivate the ground. Their origin is unknown. Whether they are the wreck of some more numerous and independent nation, as they pretend to be, gradually vanishing from the face of the earth; or whether they are the descendants of shipwrecked people, a mixture of different races, augmenting in the course of time, will scarcely ever be determined.

Their number.—As they exist at present, they form but a petty tribe, not exceeding, it is said, one thousand souls in number, and they will probably soon be extinct, for they are diminishing annually.

They have a peculiar language, but too little is known of it to determine whether it is a mixture of the languages spoken around them, or a peculiar tongue.

Their civilization.—It may well be imagined, that they are on a very low scale of civilization, one should think far below the North American Indians; yet the term savages, so lavishly bestowed upon so many nations not meriting that epithet, is not applicable to them.

Their communities.—They form communities, divided into families, governed by strictly determined usages, which are always punctually adhered to; they accommodate themselves willingly to the laws of the government on which they are dependent; they carry on a petty trade of exchange; they have a correct notion of right and wrong; crimes are little known, and the transgressors rigidly punished; they live in peace and harmony amongst each other; their food is the spontaneous productions of nature; they are totally ignorant of what exists beyond their rocks and islands; they have no established form of religion, pretending, as they express themselves, never to have thought whether there be a future existence or not.

Their former relations with Burmah.—At the time of the Burmese rule they were the most independent and unharassed people of the provinces. The Burmese have always been very bad seamen, scarcely able to retain possession of the islands belonging to their territory, and never could cope with the skilful Malay pirates. The Seelongs however, though freed from Burmese oppression, were nevertheless not better off, for they were a prey to all the numerous buccaniers not long ago infesting these seas.

Their seclusion.—It is very difficult even to this day to meet this roving tribe amongst the islands which they visit; they hide themselves whenever they see a strange sail approaching, and it cannot be denied, that they have reason to be apprehensive, for to this day irregularities can easily occur in the Mergui archipelago, where not a shadow of British authority is permanently established, on account of these parts having hitherto been entirely useless and unknown; and it is only to be wondered, that depredations on a larger scale have never occurred in those parts in late years.

The whole population considered.—These are the different races inhabiting the provinces. The small number of all (taking them collectively, not exceeding one hundred thousand) spread over an area of thirty thousand square miles, proves clearly that these unfortunate countries have been the constant scene of contest; that as the one or

the other nation settled, and began to thrive, it excited the envy and desire of a powerful neighbour, who in a single successful invasion devastated all, exterminated, dispersed, and carried away the population; and that the descendants of these, in their turn, were treated in the same manner by subsequent conquerors. The Talias, the Siamese, and Burmese, experienced successively these calamities, and the remaining mixed populations are the wreck and ruins of their forefathers, surviving their former sway and subsequent downfall. The Kareans and Seelongs, who as far as it is known, were always in subjection, had still less opportunity to increase and flourish.

Having no country of their own to retire to, they in the first instance under the scourging authority of the conqueror, felt all the calamities of invasion, and never enjoyed a time of undisturbed peace and prosperity, which was at least accorded to the conquered, in the intervals from one invasion to another.

6. *Foreigners—Chinese.*—The most important and most useful of all foreigners are the Chinese, whose semi-compulsory emigration disseminated them over the whole of the Indian archipelago, and other adjoining parts.

The tide of this emigration poured in, in the first instance, into Cochin-China and Cambogia, on account of their vicinity to China Proper, and half of the present inhabitants of these countries are represented to be of Chinese origin. They have acquired great importance in Siam, where 200,000 of this people are said to be alone in Bankouk and its neighbourhood. The Chinese also form a part of the population of the Philippine Islands. The Dutch though treating them from time to time very harshly, patronize them on the whole, in their possessions and dependencies, and their numbers are continually augmenting in Java, and in the Moluccas. Chinese are settled in Borneo, Celebes, Timor, and Sumatra. The British possessions in the straits of Malacca are full of Chinese; and Chinese are found to the north of Ava in Burmah.

Their settlement in Tenasserim.—The Tenasserim provinces held out but a slight prospect to the Chinese under Burmese rule, on account of the insignificance of the country. The Burmese authorities seem to have encouraged their settling, and the small number who did settle, acquired wealth and consequence, by succeeding in monopolizing the few lucrative branches of occupation in the country. They do not palpably increase, but will certainly augment rapidly when the provinces become of greater importance.

Their occupation.—The first forms in which Chinese appear in a foreign country are, either as merchants if they have any capital, or as artificers, if they have none. In Tenasserim the Chinese are merchants and ship owners, or ship-builders, spirit brewers, carpenters, blacksmiths, bakers, and gardeners. The introduction of Chinese in great numbers ought to be encouraged; they would be a great blessing in the wastes of Tenasserim if they would turn husbandmen.

To the generality of this people, Tenasserim as a promising place of resort is unknown, and it is the interest of the Chinese already settled to obstruct a more general introduction of their countrymen, in order to avoid competition. All Chinamen settled here confine themselves to the chief places on the sea-coast. All are married to Burmese women, and their children, if males, are brought up as Chinese, adopting the customs, manners, and dress of their fathers; they are however easily distinguished by their features, which are generally, in the eyes of Europeans at least, more comely than those of either of their parents.

People from India. 1. *Chinlias.*—The natives of the Coromandel coast, here generally known under the name of Chinlias, somewhat resemble the Chinese in their voluntary expatriation, which has its origin in the too great population of their own country, as they say; but probably much more from the facility of acquiring abroad in a shorter time, a sum of money with which they think to return like the Chinese into their own country again. By far the greater part of both however, have either not had time to accumulate enough, or think they have not enough, and they die before they accomplish their design. Their progeny, a mixed race by native women, is settled for ever in the country. A considerable number of these Chinlias are to be found in Penang and the other Anglo-Malayan possessions. They partly preceded, but many more followed, the extension of the British power in Tenasserim.

Their numbers.—Their number is not great, and they are confined to the places where Europeans reside, with whose customs and wants they are much more acquainted than the natives, and by administering to which they gain their livelihood.

2. *Bengalees.*—The same may be said of the Bengalees, who however are always inferior to the people of the peninsula of India in enterprise and capacity.

3. *Convicts.*—The convicted felons transported from Hindoostan, form also a part of this class of foreigners. Their number exceeds at present one thousand seven hundred.

Their fate in Tenasserim.—These unfortunate men are always treated with the utmost mildness, and the present state of many of them, who are well-behaved, is undoubtedly better than it ever could have been in their own country. The system is introduced, that after a few years' transportation, if they behave properly their irons are taken off, then they can be hired out either as workmen or private servants; as they have then opportunities of mixing with the inhabitants, they have also an opportunity of forming connexions with native women. Many of them, when the term of their banishment is expired, settle in the country, (hitherto but few of them have served out their time); they then form part of the population, as well as their progeny.

System of transportation.—This system has been much blamed, and certainly the introduction of so many felons into a country cannot contribute to improve the manners of the original inhabitants, but it does not deteriorate them in that ratio, as is imagined.

Difference between Indian and European felons.—An Indian convict is a different being from an European felon, and almost universally the former will be found superior to the latter.

Thugs.—The hideous crimes of the Thugs (the by far greater majority of convicts in Tenasserim are Thugs, or professional murderers) originate in religious motives, and when religious motives are set aside, yet the majority of the Thugs have been brought up from their infancy to murder as to a trade; after their conviction, they prove by their conduct that they are by far not so much depraved as they are supposed to be. The transportation of criminals from Hindoostan to this as well as to other territories, instead of confining them for life in loathsome prisons, is a commendable political act, and it is natural, that such parts should be chosen which are the most distant and in want of population. Though it seems never to have been the intention of Government to form in Tenasserim a penal settlement in imitation of New South Wales, yet part of the Hindoos will undoubtedly become colonists in course of time.

Armenians and Parsees.—Wherever there is a commercial place in the East, holding out a prospect of gain, there we are sure to find Armenians, Moguls, and Parsees, the chief native merchants, resembling in a great measure the Jews of Europe, chiefly such as they were in the time of the middle ages.

They are equally a dispersed people with the Jews, without a country of their own, equally industrious, persevering, and shrewd, and equally oppressed when they trust to native princes, but notwithstand-

ing wealthy. Until now Maulmain is the only place where they have settled, because it is the only place in Tenasserim carrying on trade.

The Portuguese.—The descendants of the Portuguese, so generally spread along the sea-coasts on both sides of the peninsula of Hindoostan, are also found in Tenasserim. No nation left so many survivors of its transient glories in the East as the Portuguese; but the progeny of Vasco de Gama's followers is sadly degenerated; they have retained nothing of their renowned forefathers, but the type of their religion, which is however with them only a heap of superstition and show of outward ceremonies, besides their language is barbarously corrupted by numerous Indian idioms. The European features are recognizable in many, but their condition and state of civilization are nearly the same with those of the natives amongst whom they live, and frequently much lower. They have all formed connexions with native women, and have no tie which unites them with Portugal, of which they are altogether ignorant. Their being nominally Christians, and their steadiness in adhering strictly to their faith, preserve them as a distinct class.

American missionaries.—There are a number of American Baptist missionaries in the provinces. They have made little progress in the conversion of the natives. The Burmese do not well know how to draw a difference between Englishmen and Americans, and they consider the latter to be a peculiar variety of itinerating white people, whose real aim and purpose are to this day unknown, or indistinctly guessed at by the multitude, and to the knowing few, a puzzling enigma. They pass under the name of foreign teachers.

Englishmen almost all in official capacities.—There are besides the civil officers of government, and the body of military officers belonging to the regiments, and besides the Europeans constituting the regiments, (two at present), few English residents here, and these are almost all congregated in Maulmain, where they are chiefly engaged in ship building, or otherwise connected with the teak forests in Amherst Province. Until very lately not one English gentleman thought of settling for the purpose of calling forth into practical use the numerous resources of the country. All Englishmen have hitherto been on friendly terms with the natives, in every part of the country. The Burmese population have too much regard for their new governors, not to treat with politeness, affability, and good-will every individual with European complexion, and no European can ever have had reason to complain. The awe which European superiority, and

British political ascendancy inspires and spreads throughout the Eastern nations, influences probably as much the natives to treat an European with particular consideration, as the appreciation of security and of a mild rule conferred by the British, over such a great portion of mankind.

Character of the natives superior to the Indians.—The character of the natives in Tenasserim is, on the whole, praiseworthy. By all who have had an opportunity of drawing a parallel between them and the natives of India Proper, they are declared superior to the Indians. One of the peculiar features of Burmese character, and one which is to a superficial observer striking, is their independence and manliness, forming a striking contrast to the submissiveness, humility, and effeminacy, so universally met with in India.

Independence and manliness is an apparent anomaly, if found amongst a people, who have been swayed by one of the most despotic governments in Asia, since time immemorial; but to account satisfactorily for this apparent discrepancy, it is necessary to keep in view the nature of Indo-Chinese despotism. It is laid down in these countries, and considered by all people as an indisputable axiom, that all and every thing is the property of the king, and that the king is lord of life and land. This rule of state and nations adopted in Indo-China, operates differently for the rights of men, though they have been always under such an axiom unknown, or not understood, yet the infringement of them, could not have been every where effected equally.

I confine my observations to Tenasserim, endeavouring to shew, that independence can exist, even where a man is doomed to be the property of his sovereign from the moment of his birth.

People in Indo-Chinese governments, are theoretically slaves of the king, but not virtually. The government could not use the whole population for government purposes. If part of the population were called upon to sacrifice their personal liberty, either to carry on a war, or to accomplish some public work, it could be only a temporary measure, and after the purpose of government was effected the majority would return again to their homes, released from their temporary bondage. The infringement consists in the unjust, forcible, and arbitrary exaction of the property of the subject.

Tenasserim formed an out-station of the Burmese empire. Governors were sent to manage public affairs, who were often superseded by others, before they knew the resources of the provinces. The inhabitants therefore easily found the means to deceive their superiors about their abilities to contribute to the revenue, or refused to do so.

The village head men, or Thoogies, were generally elected out of their own tribe, and by bribing them the villagers often succeeded in deceiving their superiors.

The Tenasserim provinces were a conquered, ruined country, thinly peopled by Burmese colonists, which never yielded a considerable revenue to government. Taking the inability of the population for granted, the exactions from Ava were more moderate; and when the exaction of the governors, and the oppression of government became insupportable, part of the population found an asylum in the wilds of the country. It is said to have been a common occurrence for people to abscond with their property into the jungles, and there wait for more auspicious times. So common must have been the practice, that after a fourteen years' peace, and annually strengthening confidence in the present government, the Kareans to this day cannot be persuaded to come to town, because they have apprehensions for their personal safety.

When the rumour spread over the provinces, in 1838, that Tharavaddie's armies were approaching to reconquer the country, the people of Tairy and Ye laid up stores of rice in the jungles, ready to fly at the approach of the foe.

Their being greatly freed from the influence of priestcraft, as will be shown afterwards, and their having no castes as well, are two additional weighty reasons for speaking in favour of their independence. Their manliness is ascribable to the same source. The greater portion have often been reduced to extremities in the jungles, where skill and courage were called into play to extricate them from difficulties, and they have enough opportunities to this day to exercise this spirit of manliness, in their often protracted wanderings in the pathless wilds of their own country. Out of this state of the country, such as it was under Burmese rule, sprang another characteristic of the people, not less prominent, but not at all praiseworthy; this is cunning, shrewdness, and falsehood. Where people of every rank, from the commonest coolie to the prime minister, had to deal with despots, at whose mercy they were without appeal, and where they had to practise every kind of delusion, to evade the manifold tyrannies which threatened them, cunning and shrewdness were therefore considered virtues of the first magnitude. The common daily bazar proceedings, however, furnish a proof that they are honest enough in mercantile transactions, far more so than their Indian neighbours, and much more than the crafty, treacherous Chinese.

All engagements ought to be ratified in public courts, then they

will be observed ; for the natives have such a dread of judicial proceedings, that they will scarcely ever infringe upon publicly made contracts. When after the British occupation, all was placed on a certain undeviating footing, cunning and shrewdness became to them of less avail, and are said to be daily less common. One bad quality however remains with them from the time of Burmese rule, which they cannot get rid of, this is falsehood in speech. A Burmese if asked a question, even of the most unimportant nature, scarcely ever gives a direct answer, but will ponder a long time, and then couch his words, in an ambiguous sense ; and if he cannot succeed in this, he will plead his ignorance straight forward, though he may be well acquainted with the subject asked. This want of good faith is a bad quality in a subject, and it would naturally follow, that an attachment to the government cannot be relied upon, and the British government ought to be on a continual guard not to be overthrown by treachery. It can be supposed, however, that there is no fear of that ; the dispositions of the Burmese on any other subject may be as doubtful as possible ; but the boon which has been conferred upon them by an equitable administration is so generally appreciated, that they fear only the present state of things will not last for ever. Only few individuals, once in power, might gain by a change ; but they will never find adherents amongst the mass of the population ; from a rebellion therefore, the government has nothing at present to apprehend.

Religious connection of the Burmese in Tenasserim with the king of Ava.—Profound veneration and attachment to the present royal family in Ava is generally spread, and has its source in religious feelings—Gaudama the first of beings, and the royal family the next in rank in this world.

Though the Burmese in the Tenasserim provinces know that they are at present quite independent of the ruler of Ava, and are not influenced by any of his ministers or governors, yet they consider the emperor of Burmah as the head of religion, but acknowledge cordially, the worldly supremacy of the English. The more enlightened and wealthy of the inhabitants take a lively interest in the affairs of their ancestors' country ; the overthrow of the king and his ministers, the usurpation of Tharawaddie, the subsequent expulsion of the crown prince, were watched with anxiety, and the present cruel proceedings keep them in awe and suspense.

The Burmese hold the customs of their forefathers in high veneration, but not so the laws imposed upon them by their superiors. The reason is, that the laws until lately have always been

arbitrary, too often not conducing to their happiness, and frequently contrary to their interest. The Burmese accustomed to tyranny, never questioned the right of imposing whatever laws their superiors thought proper, but they opposed them when they had the power, and evaded them when they had the opportunity. * * *

The love of country in the Burmese, is based much more upon natural, than moral ties. It is the face of the country, the manner of living, the similarity of occupations which ties the Burmese. As far as his language is spoken, and the face of the country is the same or similar, this is his country. From the banks of the Tenasserim to the mountains above Ava, forming the Chinese frontier, a Burmese is at home, and would be so in Cochin China could he make himself understood. The moral ties, the recollections of his youth, his parents, his wife, his children, do not so much rivet him to the spot, as the ties above mentioned. Hence a Burmese is easily induced to exchange his sojourn in Mergui for a better livelihood in Maulmaim or Rangoon, but a Burmese will never be found to expatriate into Hindoostan Proper, and very few are to be met with in Penang.

Common Interest.—The common interest which an assemblage of communities exercises, has little weight in the eyes of a Burmese. He prefers the British countries, because they are safer; but supposing an equal guarantee were held out to him in Pegu or Ava, he would scarcely settle there as in the Tenasserim provinces.

Fame, fortune, and power, cannot be appreciated by the natives of these countries otherwise than as they contribute to their bodily welfare. To consider them as the means of accession to moral ends, would appear ridiculous to the Burmese. The above passions had amongst the Burmese, a much wider field for development under their own government, than under the British. The wish to become illustrious seems at present to be nearly stagnant, they perceive that the Europeans are mentally their superiors; that the power wrested from them, is entrusted entirely to the former; and they know that they have to develop their talents only in the functions of native magistrates.

Desire after fortune is innate in every human breast, but it is less inordinate in the Burmese, simply on account of not knowing how to employ it; for fame and power, cannot be longer bought with fortune. It formerly rendered a Burmese famous, to employ his fortune in building pagodas and endowing khiaungo, or monasteries. The people emulated the prince and the ministers, who expended immense sums in this way. The British government has nothing to do with the

embellishment of Buddhistic symbols, or with the support of the numerous Buddhistic monks, and the people begin to be tired with the exertion of a sort of fame, which is not appreciated by their superiors.

Avarice.—Avarice, or an inordinate desire after fortune, without considering it as the means of gaining any thing else, seems as far as I have observed, no native vice. The Burmese hoard up money frequently in secret places under pagodas, not unfrequently in the bamboo rafts of their houses; but this does not originate in avarice, but in the apprehension of insecurity, and ignorance how to employ the capital advantageously. All Asiatic nations, living under despotic governments, who have constantly the violation of property to fear, act in like manner, and bury their valuables. British stability is not yet understood, and the certainty, that the British will maintain the country against expected attacks from Burmah and Siam, not yet believed in; so that the natives cannot be blamed for following the impulse of their distrust.

Rights of property.—The rights of another's property, are well understood and generally held sacred; except in the larger places on the sea-coast, where, like in all larger congregations, irregularities are much more common; however very few thefts happen in the country; property entrusted to natives by Europeans is very rarely embezzled; and with money they are considered more trusty and honest, than the same classes in Europe.

Robberies.—Robberies committed on the highway, or on the water, are unknown as far as I am aware, since the British occupation. Those committed on the Salween last year cannot be imputed to the Tenasserim people; they were perpetrated at the instigation of the hostile neighbours on the Burmese side.

Murder.—The same may be said of murder. To commit deliberate murder is not within the sphere of Burmese character, and murder committed in passion is equally rare, for the Burmese are much more calm than excitable, and form in this respect a great contrast to the Malays, their neighbours.

Passions—revenge.—That the Burmese are not passionate, is obvious even to a superficial observer; how far they are revengeful I do not know; however, I never had an opportunity of witnessing inveterate rancour, or hatred. There are no hereditary quarrels; in which respect the Buddhists, amongst other good qualities, have again the preference over the Mussulmen; the neighbouring Malays being

equally famous for implacability, with their religious brethren in Arabia.

Politeness.—The opinions which have been disseminated in Europe about Burmese in general, where they were represented as blood-thirsty barbarians, are wrong. On a mere superficial acquaintance, their mildness and placidity are apparent. Their behaviour is conformable to strict rules of decency. Politeness is the characteristic of all the natives of Indo-China, which amongst the lower classes in Europe is too little exercised, and which is again exaggerated when speaking of the Chinese. The Chinese are more formal than polite, on the contrary, they are sometimes rude. The Burmese are naturally polite, not only to strangers, but amongst themselves. Boat people gathered together by order of government, and strangers to each other, live crowded in a small place for months in an uninterrupted state of harmony. Common coolies address each other as Sir, and the rare occurrence of fights and quarrels amongst the lowest classes, shows, that they know how to pay each other, on all occasions, that deference which is due to a fellow creature.

Courtesy and good fellowship.—Courtesy and good fellowship are strictly adhered to; the people of one village form a community, bound together by friendship and mutual wants; and a stranger not entering into their adopted mode of life is not tolerated.

Exercise of charity.—Charity is little exercised in a country where real wants do not exist. The disabled and decrepid are maintained by their families, relations, or even by strangers. The exercise of charity amongst the Burmese cannot be considered a virtue, as its practice does not call for a sacrifice, the alimentary subsistence of a person amounting monthly to a mere trifle.

Hospitality.—Hospitality is considered in all (not European) countries, not a virtue, but a duty, for in a country where the comforts of life are not so far advanced, as to lead to the establishment of inns, all intercourse with people in distant districts would be interrupted without hospitality. Hospitality in general, is dictated either by philanthropy or by religion. In the latter case, it embraces men of a particular sect, party, or nation, and such hospitality is chiefly exercised in Mussulman countries; philanthropic hospitality has its origin in the common rights of society,—such is exercised by the Buddhistic nations. In all parts are zayats, or resting places, built expressly for travellers, who take possession of the building by right, and if the travellers be poor, they are provided by the inhabitants with food, sometimes on application, and sometimes without.

It is a peculiar institution in Buddhistic countries, to erect sheds at short distances in which are placed chatties (earthen vessels) filled with water to afford drink to the wearied traveller.

Temperance.—Temperance is one of the shining qualities of the Burmese ; their fare is simple, moderate, and wholesome. They subsist chiefly upon vegetable substances,—rice is their chief food, all other ingredients secondary.

Like all natives of the tropics, the Burmese are fond of spices ; these condiments seem necessary to digestion in equatorial climates. The majority of the people, who are Buddhists, do not drink spirits, a drunken man being considered a degraded being. The Kareans make an exception, they indulge in temporary intemperance on solemn occasions. Opium smoking exercises its baneful influence wherever the drug is introduced ; it is fortunately however too expensive a vice, to which rich people only can be addicted. In the public opinion, it is held degrading, and the epithet of “ Opium smoker,” denotes a bad character, capable of performing the worst acts.

All nations whose climate permits them to remain unencumbered with clothes, whose abodes permit the free circulation of air, whose occupations are mostly in the fields and woods, and require a free exercise of the limbs of the body, will be found possessed of agility, dexterity, and hardiness, which are the concomitants of good health, if no local causes operate inimically. The Burmese in Tenasserim are remarkably healthy, strong, and muscular, without being powerful.

Perseverance.—The Burmese are capable in moments of excitement of great exertion, but their energy is of short duration. Want of perseverance is a characteristic of them ; the reason of which may be, that few of them are engaged in regular, never ceasing, monotonous labours. The Burmese mode of life does not force them to toilsome, long continued exertions. In a highly cultivated country they gain their subsistence with little trouble, and because they scarcely ever know absolute want, or even poverty, they are more indifferent to affluence.

Patience.—Patience is the result of that mode of life which people are generally obliged to lead, who occupy countries where nature has scattered her bounties with parsimony. Though few of the Burmese are exempted from the cares of life, and the vicissitudes which attend a regular occupation, yet disappointments are not often experienced ; and as only the repeated experience of disappointments creates patience and endurance, the Burmese cannot possess that virtue.

Love of children.—One of the chief virtues of the Burmese is the love of their children, so long as they are young and helpless. This characteristic they have in common with all nations who live in a state of nature, the social connection between child and parent being the first and strongest. Burmese parents are in a state of distraction when any accident happens to their progeny; and the death of the child is often considered an irreparable calamity. Great numbers of children cannot be a burden in a country which is highly productive, thinly peopled, and enjoying security of life and property. A childless age is considered one of the greatest punishments imaginable. It will easily be perceived, that under such circumstances infanticides are entirely unknown. It does not seem here to be the case, that the love of the child holds equal pace with that of the parents.

Love of parents.—The facility of gaining independence, and the state of almost unbounded liberty in which the children roam about from their first infancy, loosen very much the ties of filial duty; there are however, but few instances of direct ingratitude on record; numerous cases however are known, where a son has taken voluntarily a debt of his father upon himself, and become a debtor servant for 7 to 10 years, to deliver his father from ignominy and prison.

Marriage.—Marriage is entirely a civil act amongst the Burmese, and considered as binding only so long as both parties find it convenient. Separation is of daily occurrence, and no public blame is attached to it. Such union cannot be supposed to possess moralities. Natural fidelity is therefore not absolutely required, and adultery is the more frequent, as there is no public ignominy attached. So an adultress; a woman lives in illicit intercourse with the consent of her husband, and when separated can form again a new union without prejudice to her, and without her new husband troubling himself about her past conduct. The seduction of unmarried girls is rather a rare case, almost impossible; because a girl attaining the age of puberty is as soon as possible disposed of by her parents. The infidelity of the wife here forms a striking contrast to the rigorous jealousy with which females are guarded in all Mussulman and Hindoo countries; it is not only met with in Burmah, but equally in Siam, Cambogia, and Cochin-China. The natives of these countries all professing Buddhism, it seems to have its source in religion, much more as the Kareans, who have no positive mode of worship, are in this respect much more strict than their Buddhist brethren.

Polygamy.—Polygamy is allowed in Buddhistic countries, and the number of wives is (as wherever polygamy is introduced) in propor-

tion to the means of maintaining them. The generality however are content with one wife at a time, and the bad effects of polygamy are confined to the comparatively small number of the wealthy. Marriage is contracted easily. The difficulties in over peopled countries, where a certain settlement or occupation in life, or a certainty of income is necessary, before people marry, are not experienced, here where every body if he like, can maintain a wife and family with ease. Polygamy and faithlessness, divide and loosen the affections of parents toward their children, yet it has been stated that the Burmese doat on their children ; and it is a strange anomaly, which is however daily seen at Maulmain, that a Burmese has a particular predilection for a fair child by his wife, even when he is well aware that it is a spurious offspring. This is, however, only the case amongst the lower classes. We have not yet any proof, how children by English fathers and Burmese mothers will turn out when grown up, the intercourse between the two nations having subsisted but fourteen years ; if we however may judge from what the children promise at present, we should be inclined to anticipate that they will be superior to the progeny of Europeans by Indian women.

Religious establishment for the education of the children.—Polygamy and connubial faithlessness have also in general bad effects upon the education of children, diminishing the care and attachment which ought to be felt. The religious institutions of the country have provided for this case. The children are at an early age placed in monasteries, established at almost every village, and endowed by the voluntary contributions of the inhabitants. There the children remain for a certain period of their boyhood, where they are fed by the monks, and instructed in reading, writing, and religious rites.

This is the education which almost all Burmese attain, but they seldom know more ; hence the general diffusion of elementary knowledge, and general ignorance in the higher attainments of science, and the great uniformity of knowledge throughout Burmah.

Knowledge of the priests.—The Pongys, or priests, are considered the learned men of the nation ; but their knowledge consisting in the explanation of theological and metaphysical doctrines, is therefore mystical, but the more appreciated by the vulgar majority, because incomprehensible.

Religion.—The peculiarities and characteristics of a nation are mostly intimately connected with their religion. Religion either dignifies or degrades the human character. In considering the religion of the inhabitants of these countries, we must form a distinction between

the Seelongs, Kareans, and Burmese, for all three have different creeds, and therefore different ideas of the Deity.

Religious belief of the Seelongs.—The Seelongs must be considered in this respect, as a people in the lowest scale. Yet the idea of the Deity forces itself upon the most savage mind.

These people have no religious creed, they have no established mode of worship, i. e. no outward manifestations of their acknowledgment of a superior being; yet they have a vague idea or impression, that there exists besides mankind, some other not visible beings, exercising an influence over the destinies of mankind, &c.

To them even the notion of polytheism and idolatry is too vague, and as far as I could, after a prolonged inquiry, understand, they believe that the sea, the land, the air, the trees, and the stones are all inhabited by nâts or spirits, either good or evil; who direct the motions of these bodies; who produce the growth of plants, &c., &c. How far these spirits influence men, they do not pretend to know. Of a future state they are entirely ignorant upon for in touching, this question, they invariably answered, "We do not think about that." The observation of things around them, seems therefore to strike their poor minds; and their small share of reflective power, leads them instantly to the acknowledgment of an invisible superior being.

The dawn of reasoning and the idea of a Deity, however imperfect, seem therefore identical; and the belief in nâts or spirits, seems to be the first and lowest of all religious creeds. The opinion that the lowest religion begins with idolatry, is not corroborated by what we find amongst these people; the Seelong's idea of a Deity is so imperfect, that he does not even represent it by a figure. The idea of the Deity being in its infancy indefinite and vague, idolatry itself is an advance to positive religion.

Religious belief of the Kareans.—The Kareans, who are already more advanced than the Seelongs, have also the idea, that certain trees, or caverns, or animals, are the abodes of mighty spirits, to whom they however do not as yet assign a form. The Burmese on the contrary, who have already their system of the Deity, embody these notions, form images, and pay them superhuman devotion, as the representations of these conceived and systemized ideas. The Seelongs apparently not believing distinctly that superior and invisible powers directly influence mankind, propitiary sacrifices, and an external mode of worship are not introduced. The Kareans having an idea of the direct influence of nâts upon the destinies of mankind, offer sacrifices to them, consisting of fowls, tobacco, rice, and pieces of mo-

ney, depositing them in certain reputed places in the jungles, and sometimes under small sheds, near their houses. The Burmese have a strictly observed ceremonial, external worship, celebrated in temples, pagodas, &c., &c.

If it is true that morals cannot exist without a positive religion, and that morals cannot be maintained without the notion of a future state of rewards and punishments, the people of this portion of the world cannot be in our sense moral, for the Seelongs and Kareans have no established religion, and the religious creed of the Burmese even excludes a continued active state after death.

Buddhism.—The leading features of Buddhism are predestination, metempsychosis, and final annihilation or absorption.

The principal moral precepts of Buddhism are the following,—

1. Eschewing every kind of evil.

2. Fulfilling of good.

3. Purifying or cleansing of the heart ; which latter again is obtained by *Neggen sheet ba*, or the eight good ways, which are, i. Caution. ii. Security. iii. Rightly directed intelligence. iv. Right actions. v. Right words. vi. Right opinions. vii. Right intentions. viii. Right way of supporting life. According with the destiny of their good or evil actions all men pass after death into certain forms, become nâts, or a lower degree of spiritual beings, or they continue to be men, or they turn into brutes. The highest degree of perfection to which any being can or will come, after passing through numerous grades of nât existence, is *Neibban*, or annihilation, or following the translation of others, an existence in a perfect state of quiescence. This is the essence of Buddhism, a religion generally diffused over a great portion of Asia ; probably, counting no less disciples than Mahometanism or Christianity. Most of the people are satisfied with performing the rites of their religion, without attempting to understand its theology, and even among the priests few are able to expound their religious tenets, because there are few who can read and write Palí, in which language their religious system is written.

They content themselves with the recitation of certain prayers, invocations, &c. and, the priests as well as the mass of the people, find it much easier to perform external ceremonies. The Buddhist adherents do not try to make converts, at least not in this country, and they are equally tolerant to all sects ; they do not affirm that their creed is the best or alone true, but say it is that religion fitted best to their country, state, and individuality, and they adhere strictly to this faith.

Conversions to Christianity in Tenasserim.—Few Burmese turn

Christians from the conviction of the superiority and blessings of our religion; and isolated are the cases of those, who for the sake of worldly gain became nominally Christians. The missionaries have hitherto signally failed in their endeavours, and the reason of the want of success with the Burmese is not fanaticism or obstinacy, but religious dogmatical indifference. They admit the beauty of Christian morals, but contend that theirs is equally good; and with reference to the dogma they say, that the Christian is equally unintelligible with the Buddhistic, and that in comparing both, they do not see any great difference; it would be bad to abandon their notions and customs, their families, and all that is holy and dear to them, to follow the advice of strangers. Kareans, on the contrary, who have positively no established mode of worship, embrace Christianity; and some of the American Baptist Missionaries, who settled amongst them, did much good. Infinitely more could be done, if all the Missionaries were equally well fitted to open the hearts of these simple children of nature by mild persuasions, instead of filling their minds with distrust by holding up the terrors of damnation.

Recapitulation of the aforesaid.—After having touched upon the essence of religion, the state of morals, the characteristics and peculiarities of the people, we are led to the following conclusions—

1. That the inhabitants of the Tenasserim Provinces possess the virtues of uncultivated nations.
2. That they cannot be expected to possess the higher morals and virtues of nations advanced in civilization; that fortunately the vices of polished nations, are, if not unknown, yet rather rare amongst them.
3. That their vices are in a great measure the consequence of the long misrule of highly oppressive and arbitrary governments.
4. That they possess original views of morality, different from those of Europeans on certain subjects, which are chiefly applicable to the comparatively low estimation of chastity among their women.
5. That the whole nation is educated to a certain degree, but that education stops short at that point, and that no higher cultivation can be expected from the present state of things.
6. That religion is no impediment to their advancement, as it does not imbue them with prejudices against other creeds, and that the absence of the caste system, so obnoxious in India, is a great advantage if their improvement be contemplated.
7. That the Burmese are therefore capable of great improvement.

Diffusion of European knowledge.—Very little, or nothing has hitherto been done by the British government, to educate the people.

There are three schools established ; however, they are more for the benefit of country-born and Portuguese than for Burmese. The Burmese are not averse to learning European arts and sciences, on the contrary they have a predilection for every thing European, the whole nation being convinced, that Europeans are superior to them in every respect.

If means and inducements were diffused to learn the English language, it would form the first important step to the mental improvement of the Burmese ; for with the introduction of this language, English sentiments are easily instilled. The establishment of well regulated schools upon these principles would be a great boon, especially if the distinguished pupils, were rewarded with minor places under government.

It would have, besides, the great advantage of rendering the people more attached to their foreign rulers, and acquainted with English ways and customs, of which they are at present entirely ignorant.

The present form of government is too new, too strange to them ; the relations between the British and the natives, too few, and too distant to expect, that sympathies should at present exist, or attachments be formed.

Though the British government all over India is well established, and is preferred, because decidedly better than any other formerly existing, yet the governing and managing Englishmen, personally, though in many instances highly esteemed, are not always liked, and very rarely beloved, because they are in most cases to the natives a strange enigma.

Value of the Tenasserim provinces as a part of India.—In the first years of their occupation, the question was raised, whether it would not be more advantageous to restore them to Burmah ; and when this was abandoned, because deemed impolitic, they were kept as a necessary burden, the expense annually exceeding the revenue derived from them.

Their possession, however, is valuable in a political point of view, besides, containing the elements of great wealth and riches, which want only development, to become pre-eminently conspicuous.

1. They command a great part of the eastern side of the bay of Bengal, which bay became, since the occupation of Tenasserim, a British sea, excluding any other power, and affording additional security to the rest of the Indian possessions.

2. They prove an advantageous position towards Burmah itself,

which is peculiarly visible at the present juncture of affairs with that power. Maulmain being the main point from which an invasion and conquest can easily be accomplished, without being obliged to plunge at once, as in the last war, into the hostile territory.

3. Their natural wealth consists, in a number of valuable productions, unknown at the first time of their occupation, and which are more or less wanted in India, such as tin, iron, coal, teak, and other valuable timber, and a host of other minor productions.

4. They afford the best possible field for European enterprize, being adapted for every kind of tropical cultivation, affording therefore the greatest inducement to make them the resort of Europeans.

ART. II.—*Memoir on the Climate, Soil, Produce, and Husbandry of Afghanistan and the neighbouring Countries.*—By Lieut IRWIN.¹

PART III.

SECTION, III.—*Of Animals.*

143. These countries have for the most part the insects and reptiles, noxious or otherwise, of the neighbouring ones, and present in this department little subject for remark. The warm and moist, abound the most in flies, musquitoes, and scorpions. Peshawur is famous for the last, but their bite is not mortal. During the spring months flies are very numerous, but before midsummer they are greatly diminished. White ants are but few, and in Cabul and the west, there are none. The musquito is only troublesome in Cabul for about forty days of midsummer. Khoorasan in general is a dry and temperate country, and has few musquitoes; but there are exceptions to the rule, and particularly Hirat and Seestan. The musquito of Seestan is remarkably large and troublesome. It is pretended they are produced in the fruit of a certain tree, which is, however, not peculiar to that country. To escape their attacks, the natives sleep in what they call pusheekhanas, which are made of the cotton stuff, in Hindoostan called guzee, and which is either made in the country or imported from that to the west. The horses which have not this defence, are so severely bitten as to bleed from the effects, and roll themselves with the pain. The end of summer and the autumn is the season of the musquito there, as in most other places. Wasps are most numerous in the cold countries. Snakes are found in all except the very coldest, but most of them are innoxious. Futihabad, between Jellalabad and Cabul, abounds in

¹ Continued from p. 900.

venomous snakes. The locust is found in these countries, but commits the greatest ravages in the warm ones and the open plains; it is commonly observed that they are brought by an easterly wind. Two seasons are yet well remembered in which these insects ravaged a part of Khoorasan. They have visited Cabul in this manner but once in the present generation.

144. The wild bee, of the kind which we have domesticated, is a stranger to Cabul, Khoorasan, and Toorkistan. Its nests are very common in the woods of Kushmeer, and beyond the Indus we find them as far as some parts of the Kafeir's country; in the south they are plentiful; at Bels, on the borders of Bulochistan, they are made on the branches of trees or shrubs, in the clefts of trees, or even on the ground, and contain as far as 30lbs. of honey and wax, but the average is only one-third of this amount. In the warm climates are two seasons of honey, one in May another in October, but the latter only is known in the cold. Two kinds of bees are distinguished, a smaller and larger. The larger has been chiefly domesticated in Kushmeer. A large earthen vessel is built into the wall of a dwelling house, care being taken to turn the mouth inwards, and to perforate the bottom of the vessel, by which means the bee shall have access to it from without. The mouth of the vessel is shut up, but so, that the owner may open it when he intends taking his share of the honey. Things being thus prepared, a colony of bees are introduced, and being fed on sugar, soon become reconciled to their dwelling. At the proper season the owner takes his share of the honey, and leaves a portion for the sustenance of the bees. The Kushmeerees leave them very little, but make some amends by introducing from time to time boiled pitha as their food.

145. Fish are an important article of diet only in Kushmeer, Sindh, and the neighbouring coast. The species known in our upper provinces, for the most part are found in the rivers of the Punjab and at Peshawur; in Kushmeer, however, the alligator and that other more dangerous animal which the Hindoostanees call *mugur*, never appear to enter the river, nor are they known in Khoorasan or Toorkistan. Khoorasan has few fish, even if we comprehend Seestan and its lake.

146. This lake is more noted for fowling than fishing. Among its reeds are great numbers of a web-footed bird, which the natives call ghoo, and catch in nets solely with a view to its feathers, which are used in stuffing pillows, and for other purposes. In all these countries ducks are found in a domestic state, but never in great numbers. At Tashkund geese are kept. The common fowl is much kept by the

pasturing tribes. In Bajour, the whole of Toorkistan, especially Bulk, and some other quarters, this bird is found in a wild state. The chief prey of fowlers is the bird in India called chikor. Some Indian birds are not to be found wild in Peshawur, far less beyond it, for instance the peacock, and that which the English call the adjutant. The parrot and myna are scarcely natives of Toorkistan, or at least of the country beyond the Oxus.

Quadrupeds.

147. The brown ground rat of India is well known in many quarters of Khoorasan and Toorkistan. It prefers a sandy soil, and is a formidable enemy to growing or ripe crops. The musk rat perhaps does not extend to Cabul. The cold countries of Toorkistan and Khoorasan, excepting Hirat, have not the squirrel. The monkey and mungoose are also not found in the same countries, except in Kushmeer, to which the mole seems confined. Hedgehogs, porcupines, turtles, and tortoises are generally diffused, as is the hare. White hares are chiefly found beyond the Jaxartes. In Cabul only is the hare kept in a domesticated state, and they may be purchased in the market for eight annas. The rabbit is not found in these countries, India, or Persia.

148. A variety of the cat is bred in Cabul, and some parts of Toorkistan. By us it is very improperly called 'Persian,' for very few are found in Persia, and none exported. The Cabulees call this cat bubuk or boorrak, and they encourage the growth of its long hair by washing it with soap and combing it. With respect to the other species of the cat genus, the tiger is found as far as Tashkund, but in that temperate climate he falls much short of the Bengal tiger in strength and ferocity. The lion is a native of Persia, and some are found as far as Tashkund, in a northerly direction and in an easterly. There remains no doubt of lions being found in Hurriana; but in many of the intermediate countries this animal is very rare. Neither the lion nor tiger is found in the cold climates, such as Kashkar and the Pamer. Leopards seem to prefer cool hills. They are very common in the Kohistan of Cabul, but they do not attack men.

149. The wolf attacks man only when urged by excessive hunger, and hence is the most formidable in cold countries and severe winters. The jackal is known every where, except in the coldest and driest districts. The fox of Toorkistan, and generally of the cold and temperate countries, has all the cunning of the English, unlike the puny fox of India. Chinese Toorkistan is the only market worth

mentioning for peltry, and thither are carried from independent Toorkistan, skins of the common brown fox, the black fox, the sable, the ermine, the beaver, and some other fur bearing animals. These are partly known in Khoorasan and Persia, but (except the brown fox) are not found in Cabul or Afghanistan in general. From Toorkistan are also carried the furs of young lambs, the best of which reach the court of Peking. The lamb must be killed when a few days old.

150. The Mahomedans reckon the bear impure and forbidden, but find several uses for his skin. He frequents the vallies of cold hills, and especially if they possess a stream. In Kushmeer there seems to be two species, the yellow and black. He is scarcely found among the detached hills of Khoorasan. The hog prefers the plains, especially if shrubby. The Hindoos sometimes eat his flesh in secret. The Kafeir's alone eat bears. In Toorkistan young horses are fed up to be slaughtered, and the onager, where found, is eaten. The rude tribes eat flesh in general in a half boiled state, and sometimes raw. The ass and mule are no where eaten.

151. Among quadrupeds, the chief game are the various species of wild goat, antelope, and deer genuses, which pass into one another in such a manner that there is great difficulty in identifying the species from description. The goats inhabit the mountains, the antelopes and deer prefer the plains. Khootun is famous for its musk deer, which are known to be found in some parts of Tibet and on the Pamer. An inferior kind of musk is brought from upper Swad, or perhaps the country beyond it to the north. With respect to what the natives call wild sheep, they cannot be of the same species as any of the domesticated kinds, but are probably what zoologists call *ovis ammon*.

152. There is no reason to believe the existence of wild horses in any of these countries. The animal which the Persians call *goorkhur* is, I presume, the onager, or wild ass of naturalists. This animal is of incomparable swiftness but may be killed by art. He is common in Persia, the western part of Khoorasan, and the plains of Toorkistan, from which he extends north into the Russian dominions and the centre of Asia. A few are kept by the Ymaks more for curiosity than use. Before proceeding to quadrupeds strictly domestic, we may mention the *bos grunniens*, or ox of Tibet, which is found in a wild state on the Pamer and the upper parts of Buduklishan, and has also been domesticated by the Kirghizes, who frequent the Pamer. They keep a few of the common kind, but many more of this species.

Domestic Quadrupeds.

153. The horse of Toorkistan has long been famous, and forms the chief article of export from that country to Afghanistan, India, and Persia. From certain quarters in Khoorasan (chiefly the north-west) horses are exported to the same countries, but in less numbers. In both cases it is chiefly the pasturing tribes who rear this animal, which is but rarely housed even in winter, or in the cold country of the Ymaks; they are not very numerous in Bulochistan, neither are they found of remarkable goodness either in that country or in Afghanistan. In the neighbourhood of Bameean however, and some other parts of the north, is a breed of very strong and serviceable ponies. Those of Tibet are broader, smaller, and stronger. In the country of the Yoosufzyes, and some parts of the country between the Indus and Hydaspes, in Bunnoo and Daman, we find a breed of Tazee horses, which are much esteemed. Horses in Kushmeer are neither numerous nor good, but there are considerable numbers of ponies.

154. The ass gradually improves as we proceed westward from the Company's provinces. Perhaps the best are those in the west of Khoorasan, but even these are much inferior to the Arabian or the Spanish. Asses are imported into Cabul from Bokhara and the north-west of Toorkistan. Mules are scarcely raised in Toorkistan, the best are bred in Khoorasan; a slender species, but yet hardy, is bred in Pothwar and the neighbouring districts. They are raised in the vallies of Jajee and Foree, in Teera, and some other places.

155. Tibet, Kushmeer, Kashkur, Keerategin, Durwaz, the upper parts of Budukhshan and the Huzara country breed no camels, being too cold, moist, or rugged, for that animal. Beyond the Jaxartes is the two humped species, in the Toorkee language called *uzhree*, and by our writers, (I believe) Bactrian; his height is far less than that of the Indian camel, his hair longer, he is not capable of bearing severe heat, and is not easily naturalized even in Bokhara. In the kingdom of Kokun he is the prevalent species, but in some places neither is known. The camel called *bughdadee*, has also two humps, but his height is equal to that of the Indian. He is found chiefly in the south-west of Khoorasan, yet even there is much outnumbered by the Indian species. This species is very abundant in the whole of Bulochistan, in Sindh, and the borders of the Indian desert. In those countries soldiers are often mounted on camels, and some breeds are remarkable for their swiftness. The camel of Ghuznee and Cabul, originally of the same species, is now somewhat changed in his properties by the climate; he cannot bear the winter cold of these

countries, and probably exceeds the Indian camel in strength, but yields to him in patience of thirst and hunger. With respect to appearance, he is not so tall and slender in his limbs.

156. The Punjab, Sindh, and the Indian provinces of the Afghan monarchy considered as a whole, have cattle nearly in the same proportions as in our upper provinces, and the quality is not very different. In the detail we find great differences, the cattle on the west side of the Jumna are superior to those on the east, the oxen of Nagour and cows of Hurriana are much celebrated, even the cattle of the Punjab are probably superior to those of our provinces east of the Jumna ; those of Peshawur are certainly inferior, and the cattle of Sindh are not remarkably good ; yet great numbers of them were carried from Buhawulpoor by Tymoor Shah's army to Cabul, where the breed is still perceptible. The native breed of Cabul yields the most wretched bullocks, but considerable numbers are every year brought from Nasour by the Lohanees, and others who travel on the southern road to India. Cattle are brought to Peshawur from the Doval of the Hydaspes and Indus. In Seeweestan cattle are not numerous or good. In the middle and west of Afghanistan and in Khoorasan, they constitute no very considerable part of the national wealth. Being kept by farmers, their numbers are in proportion to the village, and hence they are more frequently found among the hills. The pastoral tribes of the open country keep but a few bullocks to carry their tents, the cow is therefore usually house fed, or fed on meadows and gardens near the village. Round the lake of Seestan, however, are seen great herds of cattle, which pasture on the marshy grounds. The cows of the west in general give more milk than those of our provinces, and in the Ymak country some give as far as fifteen seers ; a very small breed kept by some tribes of the Kafeir's gives as far as twenty seers ; the cows of Kushmeer give a great deal of milk of a poor quality.

157. The buffalo is not fitted for cold countries, hence he is scarcely to be seen in Kushmeer, notwithstanding its moistness ; and by far the greatest stock is in Poonuch and Rajur and its other dependencies to the south, which have a much warmer climate. Far less is the buffalo suited to the climate of Cabul, which is both colder and drier, yet in both countries diligent search would probably discover a few. Buffaloes are numerous in some parts of the Punjab, and they give more milk than in the Company's upper provinces ; as far thence to the north and west as the warmer plains and vallies extend, this animal is bred, but according to circumstances in greater or lesser

numbers. In Seeweestan sheep are the favourite stock, and in the Damani, cows. In the warm parts of Pukhlee buffaloes are very numerous, and in Swad and Bhooner they constitute the chief stock, yet are buffaloes not used for carriage in those countries. Beyond Jellalabad and Lughman, buffaloes are scarcely seen. The climate of the warm parts of Toorkistan and Khoorasan is certainly favourable enough to this animal, which is yet in a manner unknown; some are indeed seen near Candahar, and a few years ago several were kept in the neighbourhood of Milkhi. The buffalo probably extends from the delta of Sindh, west, along the coast of Bulochistan; but the whole of the inland parts of the west, and the whole of the hilly tracts of Bulochistan are destitute of this animal.

158. Sheep are kept in all these countries, nor does there appear to be in Bulochistan any tribe which depends on camels alone, like the Arabs of the desert. The sheep are of two breeds, easily distinguished; the heavy tailed (called doomba), and the light tailed. The latter species is that found in India, and thence extend west into Sindh, and part of Seeweestan. The sheep of the Damani are generally of this kind, which also prevails nearly to the utmost limits of Pothwar. In Kushmeer, Tibet, Kashhur, most parts of upper Budukhshan, and among the Kafeir's, no other is known. In such a tract of country many varieties must occur in appearance and value; the finest wool seems to be that of the Indian desert, and the Rajpoot country. The doomba is found in all the other countries; and is the prevailing species in Persia, with the exception of Geelar and Mazundarum. The doombas of Toorkistan, and particularly that bred by the Kuzzahs is very large. The doomba seems a superior species to the Indian sheep; the wool on an average is equal, the carcase larger, and the flesh richer flavoured. The lamb is reckoned one of the delicacies of the spring season. The pasturing tribes of the west do not in general suffer the ewes to lamb twice, but where sheep are kept by farmers in small numbers an autumn lamb is dropped, which however does not thrive so well as the spring one. In Kushmeer, the environs of Cabul, and most other places where the sheep are housed in the winter, only one lamb is had from the ewe, but in the upper parts of Budukhshan a contrary practice prevails.

159. Every flock of sheep ought to contain a few goats, which lead the way in pasturing. In some countries goats and sheep are nearly equally mixed, but some situations are so steep and rugged, that sheep cannot accompany the goats. Where it is practicable to keep them, sheep are a more profitable stock. The goats of these countries present

some striking varieties ; black is the most common colour, but those of the mountains from which issue the Beah and Sutluj are generally white. The goats of the Kafeir's have sometimes very long horns, curiously twisted ; those of the Wuzurous have sometimes long horns, and each horn twisted as it were round itself, like the pillars of Jewish architecture. In that great range of mountains from which the Ganges and Jumna flow, we find even as far as the left of the Indus a breed of goats of great size and strength, and the natives employ them to carry commodities on roads not practicable to any other beast of burden.

160. In the Punjab the same animals are employed for carriage and burden as in our provinces, and the properties are nearly the same. Elephants, become rarer and rarer as you proceed westward. Beyond the Indus an elephant draws as many spectators as an European. In the Doab of the Hydaspes and Indus, mules are a good deal used for carriage. In Sindh, the countries bordering to the east of the Indian desert, and Bulochistan, camels are the chief beasts of burden, and are cheap and good. With respect to the other countries, we are to distinguish carriage as it may be, 1st, that of armies ; 2nd, that of caravans or of persons making distant journies ; 3rd, that of farmers on their own farms, or for the supply of provisions to towns, or distribution of town manufactures in the neighbourhood, or the interchange of commodities, within small or moderate distances. The chief carriage of the Persian army is by mules and strong ponies. The latter are by no means so esteemed as the former, yet by reason of their cheapness are actually found in the proportion of sixty or seventy to one hundred of the whole. All other carriage is but inconsiderable. Bullocks are not used except for dragging artillery, a use they are also put to in the Doorany army. In both countries it would be much more advisable to employ horses. Certain of the Loor tribes employ asses, and officers of rank who may have heavy baggage keep some camels ; were it not for these last, the motion of an army would be scarcely impeded by its baggage, for the camp followers who do not in number exceed the fighting men are almost to a man mounted on the sumpter animals of their masters. This constitution of their army must alone give the Persians infinite advantages in a war with Hindoostanee forces, incumbered with multitudes of timid attendants, and impeded by a sluggish baggage. The Afghans, intermediate in situation between those two nations, adopt in part the usages of both, in this important particular, camels however are certainly the chief carriage of their army, which generally makes slow marches. On oc-

casion of emergency, however, it is known to leave its baggage behind and make very long ones. The small armies now on foot on the sides of the various competitors for the throne use, it is probable, more mules and ponies than camels, and perhaps many years may not elapse before the former species of carriage gain much ground; the poverty alone of the soldiery now prevents its more general adoption. Runjeet Singh has made some progress in providing mules for part of his forces, but his situation is not favourable for procuring those of the most serviceable kind.

161. For long journeys the camel is the most economical carriage, and in caravans they outnumber all other animals. There are however some exceptions; the trade to Chinese Toorkistan from whatever quarter, seems to be conducted by means of ponies and horses. Commodities brought by the people of Toorkistan to Cabul are almost all on horses, but such of the inhabitants of this side of the mountains as trade to Toorkistan mostly use camels. The trade from Peshawur to Cabul, and Cabul to Peshawur, is carried on by means of all the various beasts of burden in the country; perhaps an equal weight of commodities is annually transported on camels, mules, and ponies. Some bullocks, originally Indian, bring loads from Cabul, but seldom return, being readily disposed of in Peshawur. Bullocks are little used for long journeys, except in the cases already mentioned (see paragraph 160); a few attend the army besides those of the artillery. With respect to the third species of carriage, it would lead into great details to particularize the usages of all the various districts, for within a short distance is often the greatest diversity of practice. On farms, in a vast majority of cases, the chief carriage is by bullocks. The intercourse between the towns and the neighbouring country, is as much by means of other animals, except in the quarters towards India. The wandering tribes in general have their tents carried on camels, but where, as in the west of Toorkistan and north-west of Khoorasan, they drink from draw-wells, the leathern bucket for drawing water is carried by an ass or a bullock. The tents of the Ymaks in general are carried on ponies and horses, but the Jamsheedus use a good number of bullocks. In the upper Sindh and lower Punjab, asses bring the greatest part of the fuel into towns. Asses bring great quantities of grain from Bajour into Peshawur; in the former country camels are scarcely known, although the soil and climate is not unfavourable; there are still fewer in the moist country of Koonur; asses are of much use in the internal traffic of both, and in the country of the upper Mihmuds. In the plain of Peshawur, bullocks are mostly used in bringing grain

to the town, but eamels and mules are employed in longer journeys. In Puklee many mules are used. The internal trade of Toorkistan is chiefly by ponies and horses. In some parts of the east asses are much used, but in Keerategin men transport the greater quantity of goods. Nor is that species of carriage peculiar to this country, but is known in Budukhshan, Durwaz, Kushmeer, and in the countries within the great mountains which bound India to the north. A considerable proportion of the goods carried from Peshawur to Kashkur through Bajour or Punjokhora are for some distance conveyed on the backs of men ; it is needless to observe that the roads are of the most difficult kind.

162. The animal most commonly used for ploughing in these countries is the ox, and in some of them no other is used. A circumstance which greatly recommends them, is that no other servant is required besides the drivers, whereas for all the other animals a man is required to lead. On the other hand, a single bullock is but very seldom found equal to this work ; but where the soil is light, a horse or camel is sufficient, these have also the merit of greater celerity, which may in some cases be much required in farm management. Accordingly horses are in part used over most of the open parts of Toorkistan, and by the Ymaks. In Muro scarcely any other animal is used. The use of horses in the plough, perhaps, extends to some of the other parts of the north of Khoorasan, but in all other quarters of that vast country it seems unknown, and in the other countries under review, I presume very few instances of it are to be seen. The Khirghizes plough on the Pamer chiefly by means of bullocks of the Tibet species, already mentioned, but in other quarters they use camels. The Kuzzaks employ camels almost solely. The Tureens and Burulics use both camels and bullocks. A proportion of camels is used in certain parts of the Kokur dominions, and a few in Seeweestan. In Beekaneer and the neighbouring countries, camels are used, but not so much as bullocks. It may be presumed that camels are much employed in the warm parts of Bulochistan, but among the hills bullocks are almost solely yoked. In the neighbourhood of Mooks and Abilazee, places in the road between Candahar and Ghuznee, it is not uncommon to see the fields, which are commonly light, but with a mixture of stone, under plough by a couple of asses. In Seeweestan two asses are sometimes yoked.

163. Bullocks most commonly draw water, whether it be fetched up by a rope and leathern bucket, or by the action of a wheel. Yet are camels sometimes used in the country of Beekaneer, and in others in or near the Indian desert, and always with good effect, one bringing up the bucket from the deepest wells. The Toorkmuns near the Oxus.

water their fields (for they are not ignorant of agriculture) by raising water from cuts which are made from that river, and in this operation they usually prefer the wheel, with a band of water pots, and yoke camels. Such wheels are, towards India, sometimes seen turned by buffaloes. In such quarters of Toorkistan as horses are yoked to the plough, they are also made to draw water, and camels are in use for the latter as well as the former. With respect to the treading out corn, the same animals, camels excepted, are used, as in the respective places where they are yoked to the plough, cows however, although useful in treading out, are scarcely so in ploughing. Goats too may sometimes be seen in Pushing, assisting in the former operation; which in Cabul, Khoorasan and Toorkistan is not always effected by the feet only of the animals, but by the addition of some simple machinery.

164. It must excite surprise to learn that carts are unknown in the greater number of these countries. In the line of the Embassy's march to Peshawur, they were found not to extend to the right of the Indus. There are few, perhaps none, in the dominions of Mohummud Khan on this side the river, but to the south they are used in most parts of Sindh as far as we may suppose their use demands. Carts are but little used in Seeweestan, and not at all in any part of Afghanistan, the remainder of Bulochistan or Khoorasan. In a westerly direction we may proceed nearly to the Hellespont before we see any. Neither are any found in Toorkistan on the south of the Oxus (with one exception) Bulochistan, Kashkur, Keerategin, Durwaz, the Pamer, Kushmeer, or most parts of the Doob of the Hydaspes and Indus. In the neighbourhood of Bokhara, Orgunj, Samarkand, and Kokur alone are carts used in Toorkistan beyond the Oxus. In Bokhara they are not employed for all the purposes they are applicable to. In this particular, as almost all others, our information is very scanty respecting Chinese Toorkistan. I have been lately informed that carts are very much used in that quarter, and some have as many as six horses yoked to them. The Chinese in Yarkund and the other cities use buggies and tandems, not unlike those of the English, hence there is some probability that the use of the humble, but more useful species of wheeled carriages is not unknown. In most parts of Toorkistan, and probably in many other quarters, great use is made in rural operations of a machine which seems to be a sledge.

(To be continued.)

ART. III.—*Journal of a Mission from the Supreme Government of India to the Court of Siam.*

December 18th.—At half past 1 P. M. left Maulmain. My baggage and presents for the Court of Siam in three boats; and at half past 2 P. M. halt ten minutes at Neaung-ben-tseik, when having ascertained that the elephants (six), which are to meet me at Nat-Kyning, had started about 8 o'clock, we proceeded with the flood tide in a south-easterly direction up the Attran river, passed the villages of Nantay, Keik-poron, Keik-mo-rong, Peikh-hnay-cong, Kan-ta (or Kanaumy), Being-beo, and at 6 o'clock halted for the night at Keik-mare. The banks of the river, which winds considerably through an alluvial country, have been low and wooded throughout the day.

December 19th.—At half past 2 A. M. left Keik-mare with the morning's flood, and continuing the same course as yesterday, passed several rocky (lime?) hills, and at 8h. 45m. halted for breakfast at the village of Attran, near the old city of that name. The neighbourhood of this village is said to be favourable for cotton cultivation, and the teak forests commence in detached clumps on the right, or eastern bank of the river, about Pa-baung, (a village inhabited by Shan elephant hunters), a short way below it. Complaints are said to have been made to the court of Bangkok of the number of elephants stolen from that kingdom, a little north and east of the capital, and sold into our territory; some of these hunters have been summoned to Bangkok, others have been recalled by the chief of Timmay, to which place the majority of them belong, and the rest are said to be preparing to follow them: in the meantime, strict orders have been issued by the court of Bangkok, prohibiting the exportation of elephants from Yahine, (the southernmost of the Laos towns), and the country to the southward. Left Attran at 11 A. M., and at 1 P. M. enter the Zimee river, where it is joined by the Wengeo, their united streams forming the Attran. The Zimee is exceedingly tortuous in its course, the different reaches running to every point of the compass. At 2h. 25m. P. M. halt for dinner, having come from Attran against the stream, which is very sluggish at this season; 4h. 15m. start again with the flood, and reach Kea-en (lotus lake) at 10 P. M., here we halted for the night; the inhabitants of the village are Kareens, who have fled from the oppression of the Birmans in the last year.

December 20th.—Left Kea-en at 8 A. M. on the flood, and reach Nat-Kyeaung, at 10 A. M., where we got the things out of the boats, and

wait for the elephants which have not arrived. Nothing can be more uninteresting than the banks of the Attran and Zimee, winding to every point in the compass, through an alluvial soil with banks of considerable depth, and covered with rich arborescent vegetation to the water's edge. After passing the villages on the first day, nothing is to be seen from the boats except an occasional solitary alligator, gnanah, king-fisher, or snake bird. We met three rafts of timber, in all about 260 pieces, floating slowly down the stream. The river though of great depth, having upwards of three fathoms opposite our halting place, can discharge only a very small quantity of water from the small declivity in its channel, consequent sluggishness of its course, and great height to which the tide reaches up it. Though the most productive river in the provinces in teak, its timber, particularly that of the lower part of the river and near its banks, is held in less esteem than the Irrawadie or the Malabar timber; the depth and great richness of its soil promoting its more rapid growth, and hence diminishing its strength and elasticity; our people have however in the last year overcome some difficulties in the Memlunghe river, which have opened a mine of wealth to the provinces in the splendid teak of that river and the upper Salween, if the Siamese government throw no obstacles in the way.

December 21st.—The elephants arrived to-day at noon, having been detained half a day by one of them following a herd of wild ones in the night; we have been employed apportioning their loads, and preparing for an early start to-morrow. The tigers are said to be excessively bold in this part of the forest.

December 22nd.—Goonghe-let-tet, 5h. 50m., sixteen miles. Started at 7h. 40m. A. M. leaving the banks of the Zimee, and travelling along a well trodden path used by the timber cutters, reach the Kareen village, Nat Kyeaung, of ten houses, at 8h. 35m., where we were detained an hour in endeavouring to procure guides, all the Kareens declaring they knew nothing of the country a mile south-east of their own village. I had unfortunately no one with me who spoke their language, and though they all spoke Talines, and many of them Birman, they are only to be properly managed in their own language; and it is not to be wondered at, for they have never had any communication with their neighbours for ages, except to be oppressed or cheated. We at last prevailed on three of them to accompany us, who brought us safely to this halting place, protesting to the last that they knew nothing of the road. At 10h. 15m. cross a small nameless stream. 11h. 15m. Goongalay, another stream. 12h. 5m. cross the small stream of

Danong. From 1h. 5m. till 2h. 5m. travel up the bed of a small stream, then cross the Thaybue; and at 2h. 20m. halt on the bank of a small feeder of the Goonghe, a considerable stream, on the banks of which there was formerly a town of the same name; it runs through a rich and level teak tract, and the timber is floated down it in the monsoon into the Zimee. The path has been good throughout, level and dry at this season, and even in the rains must be very passable; there is but little teak timber near the path, none good, and no sign of inhabitants after leaving Nat-Kyeaung. The soil a rich alluvion, well adapted for the cultivation of coffee and cotton.

December 23rd.—Goonghe, 5h. 40m., eleven miles. Left the last ground at 8h. 10m., and almost immediately entered a teak forest; the trees were nearly all killed for felling, generally of small scantling, interspersed with other trees, and an underwood of small bamboos; the soil generally hard, with small nodules of iron-stone in the paths, which form little water courses in the rains. None of our party knew the proper road, the Kareens to whom I trusted as on former occasions persist in denying all knowledge of the roads in this direction; the head elephant driver having been employed here in dragging timber, had a general knowledge of the forest, we were consequently obliged to put ourselves under his guidance, and with the elephants in front making a road where there was none, reached this halting place, on the banks of the Goonghe mentioned yesterday. The water in it this season, is here twenty paces across. One of the coolies was taken ill with fever yesterday, soon after passing the Kareen village, and as he has not come up, I hope he has returned there. Ten or twelve traders of those who started with us, unable to keep up, are encamped three or four miles in the rear, and as our means of carriage are limited and no rice procurable, or village to be seen for seven or eight days, our want of rice will hurry us on as fast as the elephants can march. I have sent the Siamese interpreter, one mahout, two Kareens, and two bearers for rice, and a guide to the wood cutters in the forest, about six miles westerly of our halting place. The path is nearly a dead level, in some places broad and clear, in others there is scarcely any traces of it; at one time for an hour and a half, had to cut our way through a bamboo jungle; passed two small streams, feeders of the Goonghe, and two small lakes in the course of the march.

December 24th.—Metakut-let-tet, 2h. 50m., seven miles. Were detained looking after one of the elephants till 11h. 10m. at the last ground, and had then to force our way, nearly the whole march, through an underwood of low bamboos, without any signs of a path,

except when here and there, for a short space, some of the numerous wild elephant tracks with which the whole forest is intersected, took the direction we wished to travel. No teak throughout the march. Soil as yesterday firm, and mixed with small stones, but of considerable depth, as seen in the banks of the small streams, of which we crossed three or four in the course of the march. The path, but for the jungle, would have been good, and was dry throughout; our detention this morning enabled the traders and our people (who went in search of the guide, and who were unsuccessful) to overtake us before we started.

December 25th.—Meetakut, 7h., fourteen miles. The whole character of the march and country the same as yesterday, excepting that at 9h. 40m., an hour and a half after leaving the last ground, we found ourselves on the top of a small hill, from which we saw that we were surrounded by low hills, giving an undulating character to the country; and the latter part of the march has been a little less level than for the last two or three days; a few of the teak trees of more considerable size than any we have before seen; crossed during the march five small runs of water, all tributary to the Zimee, and saw in the jungle, marks of all the larger inhabitants of the forest, bison, buffalo, cow, elephant, hog, elk, deer, &c., jungle and pea-fowl, all along the line of our march.

December 26th.—Meetakut river, 1h. 40m., five miles. Were again detained by the straying of one of the elephants in the night, till 12h. 45m. Twenty minutes after starting entered the teak forest from which much of the timber in the Maulmain market has hitherto been supplied, and came on a wide and good road by which it has been dragged to the river, partly by main force by the elephants, and partly on trucks. The teak at first scattered wide apart in single trees, becomes a little more numerous as we approach the river; but they still form a very small part of the forest; the timber larger and finer than we have hitherto seen. At 1h. 40m. reach the river, running in a deep bed in rich soil; though there is a considerable depth of water in many parts of the river, the bottom is so uneven as to prevent the timber being floated down, except in the rains. From this we march in an easterly direction, come again on the river at 3h. 10m. when we cross and halt on its banks, being a considerable distance from any other water. We have been fortunate in obtaining a basket and a half of rice from some wood cutters, at three rupees a basket. The Kareens who still accompany us know the road for the next two days; we shall then for one day have, as in the last few days, to take the best direction we can, when several of the people know the road to Kataintsein,

the Siamese post on the frontier, at least they have travelled in this direction some years ago.

December 27th.—Kyeun-Kyaung-let-tet, 4h. 20m., eight miles. Left the last ground at 7h. 45m. and march generally in the direction stated, though the route has been very tortuous, over broken ground through a forest of tall trees, with an underwood of bamboos so broken down and interlaced by the wild elephants, that our progress was exceedingly slow, excepting for about a mile, when our march happened to lay along a wild elephant tract. There has been no signs of any path throughout the day, and the elephants did not come up till past 7 P. M. Saw only a few teak trees just before coming to our ground, which were nearly all killed for felling, though we saw no stream that appeared adapted for floating them to the river. The soil appears good, though broken by many wild ravines, and water by no means scarce, but no sign of this part of the jungle ever having afforded subsistence to a human being. Marks of the same variety of wild beasts as yesterday.

December 28th.—Near the Zimee, a little above Kyeun-Kyaung, 3h. 10m. A. M. nine miles. Start at 8, along a small path, the same as yesterday; at 8h. 25m. cross the Maz-Pra, or Ko-tor Kuag, a branch of Meetakut, about which there is a good deal of fine teak, and the path begins to be well marked; at 8h. 50m. cross a small stream and an old Kareen clearing; 9h. 40m. cross another small stream; at 9h. 50m. come on the road by which timber had been dragged in the monsoon to the Kyeun-Kyaung, which we reach at 10h. 10m.; passing down in the direction of the stream, come on it again at 1h. 20m., where it joins the Zimee; passing up that river, ten minutes halt at a wood cutter's hut. The Zimee is even at this season of considerable width, and has at this place and season five or six feet of water. We obtain another basket of rice, price three rupees, and gain information about the road between this and Jung-Jung-Khay; a great deal of very fine timber still in this forest close to the river.

December 29th.—Small stream, 6h. 50m., two miles. 9 A. M. left last halting place, where there are the stumps of a teak stockade still to be seen which was erected 1147, (A. D. 1812) by Along Mindora, the grandfather of the present king of Ava, on his expedition against Bangkok, but taking a road too much to the eastward got into ravines, quite impassable for people with loads; from their steepness and the thickness of the jungle, we were obliged to return to the ground we had left, and at half past 12 took a fresh departure, and marching along at a short distance from the banks of the Zimee,

halted here at 2h. 40m. The teak here appears to be confined to the valley of the river, as not a tree was to be seen after entering the hills; the road we attempted to find in the morning would have taken us to Jung-Jung-Khay in one day, whilst by the one we are now pursuing, we shall be three or four in reaching the same place. We procured two guides at the last halting place, who had come up to float down timber, but finding the elephants and people they expected to have met here, had returned to Maulmain, their engagement with Mr. Darwood being cancelled, they also were about to return. Their occupations keeping them about the banks of the river, they are acquainted with our present route, and supposed from description they could have found the eastern road, but unfortunately were mistaken, and being very short of provisions, we could not lose time in looking for it. Our party have feasted on elephant's flesh the last two days; the people at the halting place having shot a female the day before our arrival, the flesh of which they were smoking for the Maulmain market.

December 30th.—Maitsalic Kyeung 1h. 30m., three miles. Have made wretched progress the last two days; did not get the elephants, one of which had followed a herd of wild ones, till past one o'clock. We started at 1h. 20m., and after marching ten minutes, had to halt twenty, till the guides went to look for the path, amongst many others, nearly all equally trodden by the wild inhabitants of the forest. At 1h. 50m. proceeded for another ten minutes, and had again to halt an hour for the same purpose, when we a third time moved forward, and at 3h. 5m. reached the Zimee, running a clear stream in a stony bed, with banks in a direction N. 20° W., waist-deep at the ford, and some 150 yards wide; crossed it N. 55° W., and marching along its western bank through the teak forest (of Mr. Bentley) reach this ground on the Maitsalic river, knee-deep, running N. 6° E. to join the Zimee. Here we were obliged to halt for the elephants, as it is impossible to distinguish the path even with help of the full moon; we have only one more day's rice, and shall certainly not get a supply for the next two days.

December 31st.—Small stream, 4h. 20m., eleven miles. Started at 7h. 35m. and crossing the Maitsalic twice, proceeded by a tolerable path through high tree jungle, and enter a narrow valley with a small stream, at 8h. 35m., which in twenty minutes becomes a ravine; along this ravine the hills more or less high, and more or less receding. Our route lay till 10h. 22m., when we recross the Zimee at Waatan-ghe (where it has a northerly course) in direction N. 60° E., the stream pretty rapid, and the water about three and a half feet deep; after crossing we waited for the elephants which we had left at

10h. 5m.; they did not overtake us till 1h. 5m. No one of our party having ever marched between this and Jung-Jung-Khay, we had some difficulty in finding the path, which we could only distinguish, amongst the numbers of wild elephant tracks which cross the forest, by the few marks of the traveller's knife on trees at long and uncertain intervals. At 2h. 35m. we lost all trace of these and our path at the same time, which after unsuccessfully seeking for an hour and a half, were obliged to return to a small stream we had crossed at 2h. 5m., and at four halted for the night; some of the people just at dark, discovered the path on the east side of the stream. No teak timber since entering the ravine, on the other side of the Zimce, a good many thengan trees of great size, and other trees very high, with rather fewer bamboos. The wild elephants from their tracks, seem exceedingly numerous in this part of the forest, and the first of our people saw a herd to-day on the other side of the river.

January 1st, 1839.—Halt. The neighbourhood of the innumerable wild elephants has caused us an inconvenience I have feared for some days; one of our elephants joined them in the night, the mahouts having been in search of him all the morning, returned after noon, having lost all trace of him on a bare hill some miles distant. I immediately (after furnishing them with a portion of our very small quantity of rice) despatched them again with other elephants, and to my great joy, they returned about 6 o'clock having reclaimed him. We have of course been constrained to halt here to day; I had however in the forenoon despatched the Siamese interpreter, some bearers, and some Birmans for a supply of rice, to meet us at the next halting place; they will I hope, finding we have not arrived there, come on to meet us, as there is not a grain of rice in camp for breakfast. I have tied up the elephants to night, and shall continue to do so till we are out of the vicinity of the wild ones; this arrangement will enable us to start early in the morning, and give the elephants the whole afternoon to feed, they can then be tied up, and branches cut for them; though they suffer from this plan when long continued at this season, when there is little succulent food for them; we shall in a few days be where we can let them loose at night.

January 2nd.—Karaung-tan. 5h. 20m., fourteen miles. By tying up the elephants last night were enabled to start to-day at 7 A. M. The first part of the march was over a broken country, repeatedly crossing a stream about ankle-deep; the jungle at times a little more open. At 10h. 30m. were much disappointed at coming on the place where our party sent off for rice had slept last night, giving us little hopes of any thing to eat to-day. At 11h. 10m. come on the Meeka-that, running

in a deep ravine, with a high rocky hill E.; travel up its bank, and at 12h. 10m. cross it just below the water-fall, or Jung-Jung-Khay, little more than knee-deep. The fall we saw was not more than three or four feet, but a little higher up there is a fall of much greater height; the stream divides some way above where we crossed, and forming a small island, joins again a short way below; the branches are of nearly the same size, both of which we cross; we then pass up it to the west, and at a short distance from it, at 12h. 20m., cross the Karong-tan, running down to join the Meeka-that; and at 12h. 40m. halt on the east side of the stream, about the same size as the Meeka-that. The people sent for rice have not returned, and the elephants and one-half of the rest of the people have not been able to come up, so that the party here to-night amounts in all to only sixteen or eighteen, and had it not been for a wind-fall of some yams in the jungle just before halting, we should have had nothing to eat; as it was, there were only some small knives to dig them with, and the depth the roots run in the earth is about three or four feet; my tent is also in the rear.

January 3rd.—Three Pagodahs, 4h. 10m., ten miles. Elephants and people did not come up till 8 o'clock, when having breakfasted on the roots mentioned yesterday, and fern-leaves, we left the ground at 10 o'clock, and marching along a good path, over ground a little undulating, with a high precipitous hill east, at 10h. 35m., the jungle composed of high trees and nearly free from underwood, halted at Enganoo, a small run of water at the foot of a descent from the road, a little after one, to dinner; as I was told there was no water at this halting place, and I wished to pass the night here, to enable me to get an observation of the distance between the moon and a star. Started again at 4 o'clock, march along a good path in high tree jungle, with occasional patches of bamboo underwood, till 5h. 10m., where some rocks protrude through the surface and the rocky hills at a short distance east of the path; 5h. 20m. pass some water; and 5h. 40m., just as it was getting dark, lost our path, and with some difficulty by firing muskets which were answered by the mahout (the elephants not having halted as we did), in half an hour reached the three Pagodahs, over broken, rocky, wet ground; the sky became clouded, and we had a few drops of rain till 10 P.M., when the night became beautifully clear. The ground on which the three Pagodahs, so called, though they are only three heaps of loose stones, are situated, is of considerable height, being the centre of the range. The water on the opposite side runs in opposite directions, marking the old boundary between the Siamese and Birman; the water on the eastern, or Siamese side, falling by the

Thaung-kala into the gulf of Siam, and on the western, or (now) British side, by the Zimee and Attran into the gulf of Martaban. The ground is rocky and barren, only a few stunted trees, some bamboos, and long grass; under a belief that no water was to be found here, we had halted in the afternoon to make our miserable meal, had in consequence been benighted, and tumbled about amongst the sharp, broken, rocky ground near the halting place, where on arrival we found an abundance of good water for a much larger party than ours, which will probably not be dried up for the next two months.

January 4th.—Thaung-kala, 3h. 10m., nine miles. Waited this morning at the three Pagodahs till past nine, when the moon went down, in hopes of getting a distance between the sun and moon, but anxious as I was to do so, I was defeated in my object by a thick fog which rose just before the sun, and continued till after the moon had set. It was impossible to make a day's halt, as the people had already been three days without food, except what they picked up in the jungle, and I did not know when I might expect the party despatched for rice, as we passed their previous night's halting place about noon, the day before yesterday. At 9h. 20m. we started, the elephants having gone an hour or so before; at 10h. 45m. heard some one in apparent distress calling out to the right of the road, and on going to see what was the matter, found a young elephant had taken fright, at some of the people running up behind him, and broken away into the jungle, knocked off his rider, and breaking his howdah and all its fastenings against the branches, had escaped. I sent all the people who could be spared from the other elephants after him, they picked up all his load, consisting of a large carpet (part of the presents) and some muskets, but being unable to see him, we left the things in the jungle, and started at 1h. 25m., intending to make all haste to the halting place, and send the elephants back to look for their lost companion; but we lost the road at 1h. 50m. and we did not find it again till 3h. 20m., when we continued our march, and crossing two or three runs of water came to this ground, on a beautiful mountain stream about knee-deep, and a stone's throw across, running here south-west, and falling into the gulf of Siam, and were much disappointed at not finding the people with the rice; the elephants from the thickness of the jungle in one or two places, and from some fallen trees over a ravine in which they had to march, did not arrive till 8 p. m., when it had been quite dark in the jungle for nearly three hours; they were enabled to find their way (fortunately the path was pretty well marked towards the end of the march) by the mahouts carrying in front immense torches of blazing bamboos in

a bundle over their shoulders, which gave an exceedingly picturesque effect to the whole little encampment. It is now impossible to send back for the carpet, and should the wild elephants come upon it in the night they will certainly tear it to pieces, our lost elephant will also have an opportunity, and as I believe he has not been in bondage above eight or nine months, he will probably be admitted into the herd, and having nothing to distinguish him but his belt, (should that fortunately not be torn off in his rushing through the jungle,) I fear we have not much chance of recovering him. I shall however halt here to-morrow, send one of the horses for rice to the Siamese Kareen village of Kenk-khaung, and all the elephants after the fugitive one. The path to-day has generally been good and level, through a high tree jungle, and occasionally in a ravine, always with high hills at a short distance, and our course more direct than on any previous day.

January 5th.—Halt on the Thaung-kala. About 4 P.M., the party sent for rice returned with a most welcome supply of two baskets, enough for two meals for the whole party; the Siamese interpreter to whom the money was entrusted, after a vain attempt to get the others to join him in withholding it from the villagers, separated from them and has not yet returned; the head mahout who was of the party, bought the small supply we have obtained with his own money, and the Tsokay of the village promised to bring us an elephant load to-morrow; he told the mahout the king would punish him if he received payment for the rice, but he would take what I chose to give him as hire for his elephant. I had already despatched two elephants for the load of the fugitive one, and immediately the rice arrived I sent the three others with the head mahout and a supply of rice for three days to look after him, with directions to return in that time, whether they recovered him or not.

January 6th.—Halt at Thaung-kala. About half-past 4 the Siamese interpreter returned with the Tsokay of Thaung-kala, who according to his promise to my people yesterday, brought me three baskets of rice, some salt and chillies; he received one rupee for the rice, and I gave him and the chief person who accompanied him two cotton handkerchiefs each, with which they were very well pleased; he had accompanied some Siamese officers with a letter to Maulmain some time ago, and professed to recognize me, I believe however I was in Calcutta at the time he refers to. I had just given up hopes of him, and supposed the interpreter, from what I had been told yesterday by the people who accompanied him, had very probably gone off to Tahine, where he has a wife and children, especially as he had received an

advance of two months' pay, and ten rupees for the purchase of rice ; he says, he supposed (I know not on what grounds) we were at the three Pagodahs, and was on his way thither, when he saw the party looking after the lost elephant. The supply of rice was a most seasonable relief to the people ; five or six Madras men who are not accustomed to jungle food, had yesterday considerable derangement in the bowels from living on the green fern leaves and roots, it has nearly gone off again with the improved diet.

January 7th.—Halt at Thaung-kala. The party sent after the elephant returned at 8 o'clock this morning, and as I had feared, without him ; the wild elephants are so exceedingly numerous in this part of the forest, that from the first I had little hopes of recovering him ; a short way in advance of the place I had followed him to, he had rushed down a ravine so steep and rocky that the other elephants could not follow him ; they went round, and coming on his track on the further side, followed it till they came on a herd of forty or fifty elephants, and our smaller one would not approach them ; the head mahout on the only one that would, broke the herd in hopes of seeing our lost one, as the wild ones will not admit one escaped to mix with them ; he however was not seen, and in hopes that they might come on him making his way back the road he came, and in that direction, they went back as far as Jung-Jung-Khay near which they fell in with two other large herds, but had no better success in the search, and from the time they fell in with the first herd, they of course, in the numerous paths made by the wild ones, lost all trace of his foot prints. The interpreter has just told me he saw a Tsokay of Pra-Soowan, who has charge of this district, to whom he gave an account of the number of people, elephants, &c. I had with me, and told him I was sent on a mission with a friendly letter to the Court.

January 8th.—Neauny-hen, stream near a Karen village of the same name, 5h. 10m., fifty miles. Left the Thaung-kala at 8h. 30m. our course a little more to the southward than the general direction of our march hitherto ; path nearly level, but apparently between two ranges of hills, and crossing four small runs of water, feeders of the Thaung-kala, 11h. 15m., the path lay near the foot of a high (5 or 600 feet) precipitous rocky hill, bearing N. 40° W., with its steepest side towards the south eastward ; 12h. 20m. came to an old clearing and cotton field, with a small run of water ; we halted, seeking the road, half an hour, from this in five minutes we reach Alanday Kyung, running S. 6°, 5° W. nearly as large as the Thaung-kala which

it joins. The Thaung-kala is joined near the same place by Meene-Kyning, which rises in the hills near Yea, where the three take the name of Ka-tain-tsein; further south the Mag-nan-noi, which rises in the hills towards Tavoy, joins it, and though smaller gives its name to the united stream. At 1h. 30m. we cross in a few minutes a rather steep hill bearing S. 60° E. near the eastern part of which a road runs N. E. to Kenk-Khaung, the residence of the Kareen Ank of this district; south of his village he has about seventy houses under him, who pay each a tax of fifty viss of cotton. At 3h. 35m. having halted an hour, reach this ground. Just before halting, the Tanng-thoo traders who accompanied me, and who had come on to this village yesterday, met me with a complaint against the interpreter, who had told the villagers they were not part of the mission, and not to sell them any rice; he must have heard the complaint, for one of the coolies had given him half a rupee to bring rice, this he gave to the Kareen, and directed him to tell me that he had said they were traders, and to sell or give them rice if he had any to spare; the Kareen gave this version of the story when I inquired into the complaint, and as soon as he got home, the interpreter went and demanded the half rupee or a basket of rice; the Kareen returned the money, and then told the truth, expecting I would make the man pay him back the money. I shall however henceforth supply the whole of them with rice, which will save a great deal of trouble.

January 9th.—Papan Kyuing, 2h. 10m., seven miles. The elephants which were unable to come up last night, have again obliged me to take up my quarters under a bamboo bush; they did not overtake us till 12h. 10m., when having hired an elephant from one of the Kareens, to carry the load of the lost one, agreed to pay the half of his price if they recover him, which they expect to do. We started having procured three days rice, and given a pass to the Tanng-thoo traders who separate from us here, and propose joining again in Bangkok. The country was a good deal broken throughout this day's march, and the hills apparently at no great distance, but the jungle so thick that we could not see twenty yards in any direction; we crossed two small streams immediately after quitting the last ground, and at 12h. 55m. Raja of Kyuing, knee-deep, passed two or three other small streams, and at 2h. 30m. halted at this one, to enable the elephants to come up, which they did just before dark. The Kareens have been civil and furnished us with rice, the only thing they had, as they rear no poultry nor pigs. A Taline visited us this morning from one of the military posts, the name of which, and apparently the name only, is still kept up; he

put some questions to us relative to our number and arms, but no hint was dropped of delaying us ; some mystery was made about the road, and an attempt made to induce me to go by Tauny-Kahoung road, but assuming a perfect right of choice, I merely intimated my intention of going by Ta-kanoon, which is shorter, and nearly level, whilst by the other the hills are very steep. One of our Kareen companions is at this moment giving most ludicrous and savage imitations of the dances of the Siamese, Taline, Birmans, and Sawas by the fire-light.

January 10th.—Sa-di-diang, 3h. 10m., nine miles. Start at 7h. 55m. and crossing the small ravine, in which the Pa-pan runs, proceed along a small reedy valley, through which the road has only been allowed to pass since our peace with Ava, before which time it ran east of the hills. At 8h. 10m. we passed a small trench, said to be the site of an old Siamese stockade, and the elephant pits (Ka-tyne-tsein,) from which the river and a frontier post and stockade on it take their name ; at this post during the whole fine season was kept a force of from eighty to one hundred Talines, and twenty-five in the rains ; the whole of this path is said to have been strewed with Birmese corpses in 1147 (A. D. 1812) when Along Mendora invaded Siam ; his force was marching in an extended line, almost from Thaung-kala to Ka-tyne-tsein, when the Siamese broke his line near Neaung-ben ; the king with the rear fled, leaving the van in the hands of the Siamese, who with the barbarity always displayed by both nations whenever they had an opportunity, tied them five or six at a time to the trees and speared or shot them. At 8h. 40m. cross the lesser Ka-tyne-tsein river, knee-deep, from which the country is more open to the west, the hills to the eastward continuing ; at 9h. 35m. cross the Ka-tyne-tsein, over the saddle flaps, some six miles below the old stockade now given up ; 9h. 50m. cross the Paway, knee-deep, falling into the Ka-tyne-tsein, on the banks of which we fell in with a herd of wild buffaloes, one of which the Kareens wounded, but he got away ; at 10h. 40m. enter the clearing of Sa-di-diong, the name of the Tsokay, pass two small villages both bearing his name, and halt here in the same clearing at 11h. 10m. We met some Kareens to day, who found fault with our guide for bringing us this way ; he answered that we knew the road, and would not come by the hills. Our present halting place is one of Pra-soo-one's villages, his people amount to seventy families, paying a duty yearly of fifty viss of cotton, carrying it as far as Camhoorie, for which they may make a money payment of five Siamese rupees (about six rupees and a quarter Madras) they have also to find carriage and food for officers passing this way ; they met the chief who came to Maulmain last year at Ta-

kanoon and took him with provisions as far as the Meeka-that. There are forty men liable to be called on for the public service, and thirty exempt from youth, age, or other disability. Pra-soo-one receives 60 rupees, each of the Thooghees 12, and one or two Key-danghees 6 per annum from government; the Thooghees and Tsokay are excused the tax. Every Kareen I have asked, and I have asked a great many, have come from the Martaban district, at some period or other, to escape from the Birmans; all the grown men and some of the lads speak Talines fluently. Three of the people ill with fever to-day from the night dews and cold.

January 11th.—Jungle, small streams, 3h. 20m., nine miles. Left Sa-di-diong's village at 9 A. M. and crossing the stream, proceed till 9h. 30m. when we ascend a rather steep hill for eight or ten minutes; at 10h. 20m. 10h. 40m. and 11 o'clock cross three small clearings and a village, and three small streams; at 11h. 40m., after another ascent, saw to the N. a range of high hills running E. and W., halted here at 12h. 30m.; road generally good but must be now at some elevation; passed at a "call" distance from a lake of two gun-shots long, said to be full of particularly large alligators.

January 12th.—Oulaung 3h. 30m., eleven miles, started at 8 A. M. and march along the somewhat level top of a hill for half an hour, with hills (which we can see from this elevation) on all sides, at 8h. 30m. descend for ten minutes, when we enter a narrow valley or rather ravine, along which the path lies in high tree jungle and bamboos; crossing four or five small streams, at 9h. 20m. ravine opens a little, and we pass an old clearing; at 10h. cross the Taung-Kapauny, a stream of about half a leg deep, then march twenty minutes or half an hour in a ravine, in its bed or close to the brink; at 10h. 50m. pass an old village, and an extensive clearing; at 11h. again enter the ravine, which continues to near this Kareen village of Oulaung, so called from a small mountain torrent of that name, and on the bank of which we are encamped. The path is good at this season, and well frequented; in the rains it must be soft and muddy in some places, but perfectly passable, and the Kareens say it is used at all seasons. The guides from the first village of Neaung-ben left us at Sa-di-diong, and those from that place left us here; the inhabitants of this village also speak Talines, and most of them are from the Martaban province. The Thooghee is from the old city of Haundro; the tax is the same as that of Pra-soo-one (to whom they are not subject) but I could get no account of the numbers, the Thooghee says four or five families, but from the extensive clearing, there are proba-

bly more ; as they have no market for the paddy or cotton, they probably cultivate no more than enough for their own subsistence, clothing, and tax ; they almost all possess elephants ; a female one is worth from 80 to 180 rupees, the males are somewhat dearer.

January 13th.—Way-pec, 2h. 35m., eight miles. Left the last halting place at 9h. 20m. and crossing the Oulaung three or four times, proceed along its banks ; at 10h. pass a small clearing, and at 10h. 50m. ascend for five minutes a stony hill, after crossing which the ground is broken till 11h. 30m. when there is a small space more level, with a high range (6 or 700 feet) of hills running away north on the western side of the Katern-tsein or Mime Kyning, which we cross here, at Ta-ka-noon, a Taline post of three or four houses and two large granaries, one without a roof, and neither having any grain in them ; indeed the frontier duty is now a sinecure. The chief of the post was an uncivil old Taline ; he took down the number of the people, muskets, elephants, horses, and a rough list of the presents, which detained us till 12h. 25m. when we crossed the river waist deep, which occupied a quarter of an hour, continued our march till 1h. 20m. when we halted on the banks of a small stream near a Kareen village ; had some discussion with the people at Ta-ka-noon about the road ; they insist that the eastern road from this to May-nam-noi has not been used for some years, and that it is two days march from this place ; the western road is well frequented, and also occupies two days ; it is inhabited by Kareens, and level, which the other is not ; we have consequently come the western road, for which they furnished us with a guide, a simple little old fellow, whose head I have decked out in a gay handkerchief, and out of whom I think we should have got the truth, had they been attempting to impose on us about the roads. The elephant hired at Neaung-ben village returns from this, where we get another ; path to-day pretty good, altogether amongst the hills.

January 14th.—Dat-katein, 4h. 20m., thirteen miles. Started at 8h. 25m. and crossing a hill of some height, come on the river at 9h. 25m. running in a ravine, perhaps 300 feet below us, near which our route lay, up and down hills with gradual slopes, and passing two old clearings, about 10h. enter the May-nam-noi district, at 11h. pass a Kareen village, where we obtained the first fowls we have seen since leaving the last village in our own territory ; at 12h. 30m. leave the river, near and above which we have marched all the morning, entirely amongst the hills, a high range of which hills run nearly north and south on the other side of the river, beyond which lies the eastern road before mentioned, which the Kareens have deserted, and come west since we have occupied the provinces ; at 1h. 30m. come

on a stream of water anele deep, which after running along the road and overflowing the jungle for a short way on both sides of it, disappears most unexpectedly through the apparently solid earth ; near this we are obliged to encamp, muddy as the water is, there being no other within three or four miles ; elephants come up at 6 P. M. ; the path to-day has been a succession of hills of more or less elevation, generally near the river, which often runs in a ravine with an occasional platform on which paddy or cotton have within the last few years been cultivated by the Kareens, who say that till after our late war with the Birmans, this part of the country, as being too near the frontier, was not inhabited, and consequently this road never used ; we are now only five or six days from Tavoy, as the Kareens travel.

January 15th.—Soo-gua, 8h. 40m., two miles. Were again detained till half past 4 P. M. by the straying of one of the elephants which had crossed the river in the night, and was found about two or three miles on the eastern side of it ; started immediately, and came to this village, it being impossible to proceed, as it was very dark, and the path through a high forest not being distinguishable ; we had a high range of hills to pass on leaving the last halting place.

January 16th.—Ke-dean, 3h. 50m., twelve miles. Started at 9. A. M. and marching through a continuation of the bamboo jungle in which more or less it is intermixed with jungle trees, we have marched with little interruption all the way from Nat Kyeaning ; we have seen no teak on this side of the hills, nor have I found the Gamboge, Tola, or Sapan tree, all of which I had expected to meet with here, the former are said to abound near the sea-coast, and the last is found in abundance on the See-sa-wet river (two days east of this) which falls into this river near Camboorie ; the Taline refugees and captives are employed in cutting it annually two months in the year, but in transporting, collecting, and carrying it to Bangkok, they are always occupied six months, and are obliged to furnish to the king fifty pieces, four cubits long, and a span and a half thick ; for any above the proper quantity they have an allowance of 1 tickel, for 50 viss, and any deficiency they must make good ; the selling price in the market is 1 tickel a piece ; they may compound for this service by paying 20 tickels. I heard to-day of some tyrannical restrictions on the internal traffic of the country, which I shall hear more about at May-nam-noi, where some of the exactions are made. A story is told as a good joke of two officers who were sent up to Taline lately to inquire into and punish those engaged in stealing elephants, which are sold at Maulmain ; on the night of their arrival the two elephants they brought with them from Bangkok were stolen, and have not since

been heard of; the thieves of Bangkok are said to be perfect in their calling. The path to day has been more level than we have travelled since leaving Sa-di-diong's village, and open to the eastward, the western hills continuing. We have passed some small Kareen villages with their clearings, crossed one stream of water, and passed at 10h. 30m. a spring from a rock, which after running in a small stream for a few hundred yards, is lost in the same way, as that near which we encamped on the 14th; at 1h. 40m., we passed the paddy and cotton fields of this village, the most extensive we have seen; the cotton now ready for gathering, very good, long in the staple, and pods large. At 2h. halt near the village of Ke-dean, of six houses. Elephants came up at 6 P. M. Saw at Kenny Ena (so called by way of distinction having a Kenny or convent) a very handsome elephant, with tusks at least 7 feet long, belonging to the Poonghees.

January 17th.—Roye-tsong, 3h. 10m., nine miles. Started at 10h., having been again detained by the same elephant which crossed the river two nights ago; march along a jungle path, the same as before, pretty level throughout, but rocky in the first part of the march; passed only one run of water, but a considerable extent of paddy and cotton ground, in all eight clearings, the last of considerable extent. None of the Kareen villages I have seen or heard of in this part of the country contain more than five or six houses, generally only three, but the houses are long, and several families live under the same roof; each family has however always a separate ladder up to the long verandah which runs along the front of the house opposite their own compartment. There are here, as in the Tavoy province two tribes of Kareens, whose languages are different, but intelligible to each other. About two miles from this halting place we passed the Kareen village of Ka-way, at least the female portion of the inhabitants are Kareens, the husbands are Talines, and were on duty at May-nam-noi; some of the gold washers who are sent out annually by the king were in the act of pillaging their house, as we passed; our approach saved the poor creatures' little property, though all Anhoo-dans, or people employed by the king, whether in cutting timber, washing for gold dust, or what not, receiving no pay, commit larceny by the royal licence. The present depredators were Laos people, though the Talines who are employed in the Sapan forests and the king's troops have all the same privilege; the order extends only to provisions, but nothing is said to come amiss to them, and the small officers; for the Talines who are employed as soldiers are the wood cutters, and have a boat following them the first few days on the river, which when filled with plunder they send home to their fa-

milics; villages in their line of operation are likewise exposed to their tender mercies. The line of our march has been at no great distance from the river, and on its banks we are encamped to night; we have all day been surrounded by hills on all sides, except to the north-west, the jungle a mixture of trees and bamboos as heretofore; the only tree of any value we have seen is the Kanean, or oil tree, a considerable number of which we have passed in the last two days, towering as they always do far above the highest trees in the forest, with their beautiful straight stems and light green foliage; many of them reach a height of fifty or sixty feet without a branch.

January 18th.—May-nam-noi, 2h. 50m., nine miles. One month from Maulmain. I had calculated on being in Bangkok in twenty days, and we are still eleven days from it; we have lost several days, by the loss and straying of the elephants, and want of guides in the uninhabited forest, which it has been the policy of the Siamese and Birmans to keep between them. Had all circumstances been most favourable, it would have been impossible to have accomplished it in any thing like the time I anticipated, travelling as I have done with elephants, and obliged for days to cut away the interwoven branches to allow them to pass. Left the last ground at 8 A. M. and travelling for about twenty minutes through the old clearing near which we had encamped, reach the river near which we march for ten minutes, when the path takes a direction more to the westward, and we commence the ascent of the hill we have seen to the S. W. of us for the last three days; the passage of the range occupied about an hour, the path, after those I have travelled to the N. E., by no means steep or difficult; at the bottom of the hills to the southward, after crossing, we came on a path more travelled than any we have seen since leaving the Mcta-keet teak forest, leading the west to Tavoy, which may easily be reached from this with elephants in five days, the road is said to be generally hilly and difficult in some places; at 10h. 20m. after passing a new clearing we came on the river again, where we cross and halted here in a shed prepared for us on the shingle (its bed) by the Myotsa of this place, who soon after we halted came to my tent, and remained for upwards of an hour; he brought a basket of rice, some vegetables, dried meat, cocoanuts, &c., for which he refused to receive payment; about 1h. 30m. the elephants came in. The May-nam-noi, from which the lower part of this river now takes its name, has its source in the hill somewhere east of Yea, and falls into the Dayeik, or Dareik, by a deep rocky ravine of not more than a few yards wide, opposite the present small frontier post of the same name. The old city

of Dayeik, or Dareik, of the old maps, is situated on the banks of the latter stream, about half a day above the junction of the two; it is now destitute of inhabitants, but as we are much less troublesome neighbours than the Birmans, the present Myotsa, who is a Taline from Kaling-Aung in the province of Tavoy, has received the royal order to re-establish it with Talines, who he says will be allowed to bring their wives and families here with them; this is however in my mind very questionable, for the king with good reason, fears the Talines would return to their own country if they could once get so near it, with their families. I here found six thugs who arrived fifteen days ago, having made their escape from the Tavoy jail; I requested Myotsa to give them in charge of the Siamese officer now on his way from Bangkok to Tavoy, promising the allowance of 10 rupees a head for them when returned to Tavoy; he said he could not give them up without a royal order, and if he could, the officer would probably not receive charge of them; a good deal was said pro and con, and he at last agreed, at my suggestion, as he could not take care of them (having only come here to meet me, and see to my provisions, &c. and being again about immediately leaving to return to Be-lank-Kyeung to wash for gold) to send them to Camboorie, as it is probable I shall there meet the officers who annually visit Maulmain and Tavoy from Bangkok. I declined receiving charge of them, having no means of preventing them making their escape, and told him I should at all events demand them at Bangkok, and he must hold himself answerable that they were forthcoming, this he readily promised, and was altogether very friendly and civil; he also provided me with a boat, in which to send some of the heavy things, and some sick people to Camboorie, at which place it will arrive at the same time that we shall, the river being so tortuous that it takes five days with the stream to reach Camboorie from this place. In the course of the afternoon some twenty boats with the Laos people from Chindapoorie, who were taken prisoners by the Siamese in their cruel destruction of that place about twelve years ago, passed up on their way to the Belank river to wash the sand for gold; last year was an unsuccessful year; the number of people employed amounts in some years to 2,500, they are employed three months, and are ordered to produce a maximum of one tickel each of gold, all over which they are allowed to keep; some only get a half, some a quarter, others less; they are all sworn to give in all they have obtained on their return to Bangkok; few make up the tickel; they have the same licence as to provisions as the Taline wood cutters, and it was a party of them who

plundered the village near our last halting; the old Myotsa came after sunset with an invitation for me to stay here two or three days; I was however told he only wanted the credit at Bangkok of having been civil to me, I accordingly, which I should however have done under any circumstances, declined remaining, and pressed him again about the convicts; he repeated his promise to send them to Camboorie.

January 19th.—Bang-tee, 4h. 6m., twelve miles. Having started the boat with the tindal, and some of the heavy presents, and discharged the hired elephant, left our halting place at 9 A. M., and at the top of the bank passed the village of May-nam-noi, consisting of four miserable bamboo houses, that of the Myotsa not to be distinguished from the others, and surrounded by the remains of the old stockade, which has not been repaired for many years; proceeding not far from the side of the river, through a bamboo jungle and over broken ground, passed a small Kareen village at 9h. 35m., and at 11h. 15m. cross the river (now named May-nam-noi) running here N. 20° E. on a sand bank in the middle of it; after crossing the river saw a few teak trees, the first on this side of the hills, and had a glimpse of a herd of twenty or thirty wild buffaloes, noble looking animals; at 1h. 40m. halted here in a thick jungle, surrounded by hills, on a small brook, which passes through a ravine to join the May-nam-noi; path has been good all day, particularly in the teak forest; gave the old Myotsa who has been exceedingly civil, a small carpet at starting this morning.

January 20th.—Weing-wee, 4h. 10m., nine miles. Started at 8h. 20m. and march for an hour over broken irregular ground, surrounded by hills which frequently approach so close as to form rugged ravines; we then came on the bank of a small stream, or rather a chain of lagoons, where we waited an hour for the elephants to tread down the strong reeds, of twenty or thirty feet high, with which the narrow ravine is filled to the foot of the abrupt, broken stony hills, to enable us to pass; this continued till noon, where again, after a short ascent, we came amongst the stony ravines and narrow valleys of the limestone hills; at 1h. 30m. came to a small clearing, and at 2h. halted here near a deserted Kareen village; the family only removed a few yards, and built a sand pagoda three feet high to propitiate the Nâts, having been frightened away by the very ominous circumstance of some mushrooms sprouting up in the fire place. The path to-day has been the worst we have travelled, which is accounted for by the people from all the communication between Bangkok and May-nam-noi being carried on in boats; if more frequented it would of course be better, but no traffic could make it a good road; there is another road on the eastern side of the river, which the Myotsa of May-nam-noi told our

guide was the best of the two, but water was scarce by that route ; the guide told us he did not know the other road, and so brought us by this one, it however turns out that he does not know this one either, and has to trust to a boy who came to accompany him back to his village. Had a visit from a tiger last night, strange to say the first since leaving Maulmain.

January 21st.—Ta-ta-kan, 4h. 30m., thirteen and half miles. Started at 9h. and ascend gently along a pretty good path for half an hour, where an equal descent brought us to the bottom of the low hill, where crossing a small stream springing from the rocks close to the road side we enter a small level, covered by prickly bamboos ; the eastern hills recede here, and our route lay near the foot of those to the south-west till 12h., when ascending the debritus (nearly all the hills to this have been limestone) at the bottom of the hills which are composed of red sandstone, very steep, and perhaps 700 feet in height, march along a rocky path, and through a short ravine, crossing one small run of water, till 1h., where we again came to the level, reaching to the river, across which our route lay till 1h. 45m., where we halt on the western bank of the river opposite Ta-ta-kan ; the Myotsa, for it is still dignified by the title of city, having once I suppose been entitled to it, came over immediately and invited me to a Tay he had erected for me close to, or rather over the water on the other side ; as however an unnecessary loss of time would have been caused by crossing the river, the best road being on this side, I thanked him for his attention, but declined crossing the river ; he was satisfied and very civil ; he brought some eggs, cocoanuts, and a basket of rice, for which he refused payment ; he was born here, but his father was Myotsa of Maulmain, in which he had about forty houses in the time of Tsen-bue-shen, son of the great Alom-pa who ascended the throne of Ava about 1744 ; he receives sixty tickels a year from the king, and is one of nine Myotsas under the Camboorie May-won, six on this and two on the See-sa-wet, and one between the rivers, all Talines, except Pra-sa-one of Kienk Khaung, who is a Kareen. The Kareens are said to amount to 1,000 under Camboorie, who pay each fifty viss of cotton ; the village of Ta-ta-kan contains only seven houses, and the stockade, which was of bamboos, is quite in ruins ; the river is here about a stone's throw and a half across, about five feet deep, and very sluggish, with high banks on both sides. The path to-day has been good, and generally level ; from this there is a path west of Tavoy ; our boat and also the six thugs have passed down ; of the latter I am told there are eleven more at Camboorie.

(To be continued.)

ART. IV.—*Remarks on the Geology, &c. of the country extending between Bhar and Simla.*

TO G. R. CLERK, ESQ.

Political Agent, Ambala.

SIR,

In reporting my arrival at Ambala, I beg leave to lay before you an outline of the route I have followed, and of my proceedings. From Ambala I proceeded to Bhar, and from thence traversed the Pinjore valley as far westward as Nallaghur; I then ascended the mountains en route to Ballaspore per Ramghur. In this tract I passed over a series of rocks, consisting principally of sandstone, slate clay, limestone, and trap, a particular account of which I shall afterwards take the liberty of laying before you. Close to Ballaspore I crossed the Sutledge, and proceeded along its banks for some distance. Being still unsuccessful in finding an out crop of coal, I prosecuted my search towards Mundi.

In the Mundi territory, near to the village of Tuttepoore, coal occurs, agreeing in mineralogical characters with the canal coal of Britain, &c., and if it could be found in quantity, would be well adapted for steam vessels, &c. I regret however to state, that the advanced state of the season, and other untoward circumstances prevented me from carrying on my investigations.

That coal may occur here in quantity, is probable from the circumstance of its being found in the same formation, and associated with the same rocks as the coal beds of Britain, &c.; and the specimens which I have brought to Ambala, equal to a maund, shew that it will be well adapted to the purposes for which it is so much required. I hope therefore another opportunity will be granted, in order that I may finish my examination, seeing that there is so much probability of success; and if I am successful, I might then direct my attention to the route by which the coal might be transported to the banks of the Sutledge. I would feel particularly indebted, if you lay my statement before Government, and if in accordance with your views, with a request that leave may be granted at some future period for finishing my inquiry.

AMBALA,
30th Jan. 1840.

I have, &c.

(Signed) W. JAMESON.

(True Copies)

(Signed) G. CLERK, *Polt. Agent.*

REPORT.

The observations which we are now about to offer, being made during the most unfavorable period of the year, viz. July, scarcely a day passing in which our investigations were not interrupted by rain, are far from perfect; we hope however when the season is more favorable we will be allowed to resume them.

In the mean time our remarks will be principally confined to the country extending between Bhar, and a few miles beyond Simla. By means of the road sections and the numerous streams which occur, the country here has been well opened up, rendering its examination comparatively easy and satisfactory in general, in many places however, from the various alterations and dislocations, difficulties of no ordinary nature are encountered.

The field which we are now about to enter on, although frequently trodden by travellers, has never as yet engaged the particular attention of any geologist, a remark which applies nearly to the whole of the Himmalehs. Thus it has been lately remarked, "*We possess but little information as to the general direction and dip of the strata of the Himmalehs; even the principal geognostical features of the various formations are scarcely at all known to us.*"* No doubt some remarkable statements have been made, and none more so than those of Mr. Gerard, who mentions that he met with fossil shells, in alluvium, at a great height, as fresh and entire as if they had recently emerged from their *own* element; and that just before crossing the boundary of Ladak and Bussahor, he found a bed of *antediluvian oysters*, clinging to the rock as if they had been alive, and that at 16,000 feet above the level of the sea. Well might the author of the Geognosy of India conclude his remarks on the above, with the observation, that verification of this is expected.† It is a statement truly remarkable, and well worthy of the attention of future travellers. In an address lately delivered to the Geological Society of London by its late distinguished president,‡ we have the following remarks, "that Captain Grant in his account of Cutch, and Mr. Malcolmson in his description of a large portion of the Indian peninsula, have not ventured to call strata which they have examined, by the names which describe European formations." If any thing has been proved by geological investigations, conducted in the different quarters of the globe, it is, that in every country the rocks composing

* British India, vol. III, p 316.

† British India, vol. III, p 326.

‡ Addressed to the Geol. Society, London, Feb. 1838, by the Rev. William Whewell.

the older formations present such a similarity to each other, as to render it impossible to point out any specific distinction. Thus Humboldt has made this remark, in regard to the rocks occurring in the Andes,* discovering no difference between them and the European of the same comparative ages. The same remark has been made† and pointed out to us by Professor Jameson, which is amply verified by the extensive geological collection brought together from all quarters of the world, consisting of upwards of thirty thousand specimens deposited in the Edinburgh Royal Museum; nor have we met with any rocks among the Himmalehs, differing from those we have seen in Europe.

That the newer formations exhibit in different countries, different characters, we were entitled, a priori, to infer. Thus the American tertiary deposits, as has been proved by the researches of Rogers, &c., are quite different from the European; but it has been shewn from the first time these deposits were described, that they, in their distribution, were circumscribed, hence the name given to them by their discoverer Wemer, of local deposits.‡

In extent, the Himmalehs are calculated to be upwards of 2,000 miles, running in a north-east and south-west direction. In such a vast extent of mountainous country, we have the individual mountains assuming all variety of forms, varying according to the nature of the rocks; thus we have peak-shaped, conical, dome, round-backed, saddle, table, &c. To pay attention to the form of mountains in connexion with the rocks which compose them, is of the greatest consequence, it being a well known fact that the shape varies with the rock, and an experienced geologist can, with a good telescope, distinguish, and that too with great accuracy, what a distant country may be composed of.

From the different countries through which this mighty chain runs. it has received various names. Thus its continuation to the west has been called Hindoo Cosh, which by Humboldt is considered as the continuation of the Kuen line; of the Macedonians, it was the Emodus; and the Imaus of Pliny; it probably also, in those days, was called Himmalehs, as the Greek title was borrowed from the Sanscrit.§ In its prolongation to the eastward, according to Colonel Kirkpatrick,

* Humboldt on the superposition of rocks.

† Appendices to Capt. Ross and Parry's Voyages, and Cabinet Library, vols. Polar Regions, Africa, &c.

‡ Cuvier's Theory of the Earth. By Professor Jameson, Notes to 5th edition.

§ Journ. Geograph. Soc. vol. IV. p. 63.

it is called Humla to the north of Zumila, and beyond the Arun, according to Hamilton's map, appended to the History of the Goorka war, the Harpala mountains. Klaproth and Abel Remusat have collected from Chinese writings, the continuation of the chain in the snow-clad peaks to the west of Young-Schan. These turn abruptly to the north-west on the confines of Hon-Konang, advancing ultimately, according to Von Humboldt (who seeks in description, geography for the evidence of the elevation of mountain chains on longitudinal fissures) to the sea, and terminating in the island of Formosa.* We shall afterwards take an opportunity of inquiring into those views of Humboldt, and point out the observations upon which they are founded, being interesting not only to the geologist, but also to the geographer. To make a geological survey of such a vast extent of country, even if permission were granted to traverse many of those tracts inhabited by barbarous, half civilized, and jealous tribes, is a vast undertaking, and would be the labour of many years. The researches of Humboldt, Ehrenberg, &c. have laid open to us a great part of western Asia; of the countries between it and India proper, we possess but little information, and that we owe to Burnes, Bell, Sterling, &c.; we have here therefore still a great desideratum.

For many years the Himmalehs were considered the highest mountains in the world, lately however it has been proved by an observer of well known accuracy, Mr. Pentland, that they are surpassed by some of the peaks of the Andes; of the passes, the lowest, the Tungmug, is calculated to be 13,739 feet, and the highest, north-east of Koonawur, is 20,000, which allowing the culminating points of the chain to be 28,000, would give a relation of the main height of minimum of crest to the culminating point of $1 : 1 : 6 \frac{6}{8}$;† Humboldt many years ago reckoned it at $1 : 1 : 8$.

In regard to valleys, it has been stated, that the direction of the *principal valleys* is in general at right angles, or perpendicular to the central or high mountain chain; whether this is the case in regard to the principal valleys of the Himmalehs, is a question; at present we are inclined to believe that they are not, and that they are parallel to the central chain, and thus forming those kind of valleys properly denominated *longitudinal or parallel*.

In groups of chains of mountains, as in the Himmalehs, it has generally been shewn, that there is a central or high mountain chain,

* Journ. Geograph. Soc. IV. p. 63.

† Journ. Geograph. Soc. p. 63.

from which shoot at right angles smaller chains, named *principal chains*, and that between these the principal valleys occur; subordinate to these, we have other mountain chains, running at right angles, or perpendicular to the *principal*, and termed *secondary chains*, and the valleys between these, *secondary valleys*. That however does not appear to be the grouping of the mountain chains among the Himmalehs. Here we have the principal, secondary, tertiary, &c. chains running parallel, as already mentioned, in regard to the valleys to the central or high mountain chain;* as examples of valleys running parallel to the central chain, we may give the Dehra Dhoon, and the Punjore Dhoon. The appearance presented by many of the small lateral valleys is remarkable, occupying the upper two-thirds, or half of the mountain, and forming that kind of valley, which has been denominated "Coorie"† In the neighbourhood of Bunnassur, there are many fine illustrations. Another very remarkable appearance is presented by the valleys first pointed out by Bourquet, as occurring among the valleys of the Alps, viz. *salient* and *re-entrant* angles. In regard to this appearance in the Perynus, Raymond says, which is quite applicable to many of the valleys between Bhar and Simla, "that the angles so perfectly correspond, that if the force which separated them were to act in a contrary direction, and bring their sides together again, they would unite so exactly that even the fissures could not be perceived."

On ascending the mountains towards Simla, and in fact in every direction, an appearance is presented, which strikes much the attention of the traveller on his first visit, we allude to the terraces on the acclivities, bases, and summits of mountains, resembling much the parallel roads of Argyleshire, so ably described by Sir T. Dick Lauder,‡ they however, like the Scotch, are not parallel to each other on the opposite side of the valleys, and moreover they occur every where,

* Physical Geography is at present but in its infancy, the description of the form and grouping of mountains is but imperfectly understood, and much neglected. In books of travels, the vague descriptions given in general, are quite beyond comprehension. In this country scarcely any attention has been paid to the subject, though presenting probably the first field in the world for observation. We shall afterwards inquire into the age of mountain ranges, based upon their parallelism, a supposition first advanced and ably defended by the celebrated Beaumont, when we have examined more of the Himmalehs, which will allow us to compare this mighty range with those on the European, American continents.

† Imagine an oblique truncation, partly hollow in the upper two-thirds, or half of a mountain, and we have the appearance represented.

‡ Sir T. Dick Lauder's explanation being generally so well known, it is useless for us to notice it here. See Trans. of the Royal Soc. Edinburgh.

throughout the mountains. That they have been produced artificially by man, is evident from these two facts, it is also the method adopted in cultivating the mountains at the present day; we never however, (at least very seldom) see cultivation carried to the summit of mountains, which appears generally to have been the case in former times, shewing that husbandry must have been carried to a much greater extent by the former inhabitants of the hills. There is another fact pointed out to us by Mr. G. Clerk, which goes far, if other evidence was wanted, to prove, that the terraces generally were produced by artificial means, viz. that in those places where they are well marked, we never see old trees, and again in those places where there is not a vestige of them, we meet with trees of great dimensions, pointing out that in all probability these tracts were unworthy of cultivation, and that therefore any thing was allowed to grow; in general where the latter occur the acclivity is steep.*

In regard to the different parts of a mountain. The *foot* among the Himmalehs is generally found, owing to the steepness of the *acclivity*, to occupy but a very small proportion; the *acclivity* is always the most extensive part, its angle varying from a few degrees, to the mural. The *summit* in general is very steep, and frequently truncated, if we may be allowed to use the expression. *Soil*. The superincumbent soil, from the nature of the rocks, is in many places very good, presenting a rich vegetation. It is of two kinds, transported and untransported; of the former, we have five examples in the valley ascending from Pinjore to Bunnassur, being in many places upwards of 150 feet in thickness, and with boulders, many of an enormous size, of rocks quite different from those we meet with in the neighbourhood. In crossing Hurreepore bridge, and ascending towards Subbathoo, there is another fine example. That these are transported soils, is evident, not only from the nature of the boulders which occur, embedded; but also from their form being always rounded, shewing that they must have been brought from some distance, and subjected to considerable attrition. Into the age of these deposits we shall afterward inquire, our examination as yet being of too trivial a nature to allow us to speak definitely. It has been

* Dr. Griffith in his account of the mission to Bontan, states, that he found many of the "lower mountains curiously marked with transverse ridges." These he further adds, "have much of the appearance of ancient terrace cultivation, but on inquiry, was assured that such was not their origin." He does not give any explanation as to the manner in which they were produced; probably, however, they may have been found in the same manner as the Scotch parallel roads. For Dr. G's. remarks, see Journal of the Asiatic Society, New Series.

stated to us, that in the first locality, bones of fossil animals have been found, either imbedded, or in the neighbourhood. If the first statement should turn out to be correct, of which however he is doubtful, it may probably be the means of allowing us to draw conclusions in regard to the age of these deposits generally throughout the Himnalehs. To these transported soils we therefore beg to direct the attention of observers; of the latter, or untransported soil, we have of course abundance of examples. In many places it is of great thickness, as has been shewn by some sections lately made at Simla on the road from Subbathoo to the village of Draw, it also occurs in many places, of great thickness. This kind of soil is formed by the decomposition of the subjacent rock, or rocks and vegetable matter, and contains in general imbedded angular fragments of the rocks which occur in the neighbourhood. In regard to boulders, it may be stated, that there are two kinds, which may be denominated *natural* and *artificial*, the former produced by decomposition, the latter by attrition. To account for boulders in many cases on the summit of mountains, many erroneous statements have been made, and absurd theories proposed, which would have been avoided if the author had paid attention to this, and examined the mineralogical characters of the boulders, and of the rocks in situ; for instead of finding that the boulders had been brought from a distance, it would have been discovered, that they were in their original position. In trap and granitic districts, these natural boulders are frequently met with; in the former, caused by the oxydation of the iron, which enters more or less into the composition of all traps, and frequently in its least oxydized state, and thus tends to combine with more oxygen; in the latter, by the decomposition of the alkali of the felspar (generally potassa) a substance frequently found in the felspar of granites;* the earth which remains is the celebrated Porcelain earth. To find trap on the ground scale exhibiting the columnar structure, and each of the columns composed of a series of balls, is not unfrequent. It is in these districts we meet with so frequently natural boulders of trap; if we examine minutely into the structure, we shall find that the concretions are

* Analysis of rocks is a subject, which has as yet engaged but little attention; we are glad to see that one chemist in this country (Professor O'Shaughnessy) is paying some attention to the subject; it will amply repay his trouble, opening up a wide field of discovery, and at the same time giving to geologists the means of validating or refuting many of the theories, in regard to the formation of rocks which have been advanced. We hope therefore the Professor, who in his splendid laboratory has every thing at his command, will take the opportunity of conducting operations upon a more extensive scale, and at the same time give quantitative analysis.

arranged in concentric caurellæ, and as these are decomposed from the cause already mentioned, the natural boulders are found. To find artificial boulders at great heights among the Himmalehs, is not uncommon; their distribution, and how caused, we shall afterwards inquire. Vegetation in its distribution among the mountains presents very extraordinary characters—thus that of the south side of a hill is quite different from that of the north; moreover the grouping of trees in the two aspects is quite different. On the northern they become much sooner shrubby, and disappear, than they do on the southern. This is amply proved by the observations of Mr. Gerard, for a copy of which we are indebted to Dr. Macleod.

Springs.—In regard to the temperature of springs, all those we met with were of the same temperature (or a little lower) than the surrounding air. Having made these few preliminary observations, which will prevent much repetition in the series of memoirs about to be offered, and of which this may be considered the first, in order to elucidate the geology of the Himmalehs, we shall now direct our attention more particularly to the subject. The rocks met with between Bhar and Simla, belonging to two grand divisions, viz. the *secondary* and *transition classes*, the latter, transition, may be subdivided into the older and newer, or the transition properly so called, and the *Silurian formation* of Murchison, a term lately given by this distinguished author to a series of slates, sandstones, and limestones, lying between the old red sandstone and grey wacke series, or, in other words, a mere extension of the latter, according to the views of Professor Jameson. To Mr. Murchison however much credit is due, for the able and luminous manner in which he has elucidated these rocks. By him they were first discovered in South Wales. In Scotland this so-called formation had been long known, though not considered entitled to another denomination; they have also been discovered in various parts of the European continent. In Asia Minor, Mr. H. Strickland stated to us, that he had found a large series of rocks as their equivalents. In India they have never as yet been noticed, although they seem to occur in vast abundance among the Himmalehs, at the same time, exhibiting characters similar to those met with in Wales, judging from hard specimens.* Their extent we have not as yet been able to ascertain; it must how-

* The specimens we allude to were in the possession of our friend R. J. Hay Cunningham, who brought them from particular localities in Wales mentioned by Mr. Murchison. In the Museum of the Royal Society Edinburgh there is a collection presented by the discoverer; but so uncharacteristic, as to be quite unfit for reference.

ever be great, judging from the abundance with which they occur between Bhar and Simla. In Sect. I, which points out the formations generally, we have made no mention of tertiary rocks, not that they do not occur, but want of time, and the state of the weather, has prevented us, as yet, from examining them. From what has been stated by some authors, they seem to occur in great abundance in the Sewalick, or Sub-Himalah range, from whence the splendid fossil organic remains lately discovered (which have excited such vast interest in the scientific world), have been obtained; with regard to these deposits, little satisfactory information has, as far as we know, yet been published. The fossil organic remains have received much attention from Falconer, Couleley, Baker, Colvin, and Prinsep, the last of whom, by his zeal, ability, and perseverance, has stirred up a spirit of inquiry, and given a stimulus to science in general, which before his time was unknown; his loss to India at the present moment is truly a national one. By several individuals splendid collections have been transmitted to Europe, among which we may mention those of Colvin and Macleod. In the Palæontology* of this country, still, however, there remains a vast deal to be done.

At Bhar, the secondary rocks we meet with consist of sandstone, slate clay, and trap. As we proceed eastward to Bunnassur we meet with the same rocks, having a dip S. and by E. with an angle varying from 15° to 50° . The trap (green stone) abounds with iron, giving the rocks in many places a reddish brown colour. The same remark applies to the slate clay, which in many places is much decomposed. At the line of junction of the sandstone and slate clay with the trap, they are frequently found to be highly indurated; of this appearance we have many fine examples at Bunnassur. The sandstone, which is in general of a greyish white colour, abounds with mica, giving it in many places a slaty form; this variety is the micaceous sandstone of some authors. In the locality just mentioned, I found a large calamite in the sandstone, and in the slate clay at a short distance from it a fern and seed. The iron which occurs disseminated through the wackes is the red iron ore, or red hematite, in too small quantity however to be of any economical value. In proceeding

* Since the above was written, we have seen the splendid collection of Capt. Baker at Dadoopoor. In it we saw several specimens which could not be referred to any of the animals already described, no doubt quite new species; one, of which however there was only a fragment, seemed to belong to a genus hitherto unnoticed, approaching in several characters to one of the genera established by Cuvier, probably forming one of the connecting links.

from Bhar towards the Fir-tree Bungalow, we meet with much trap (greenstone) breaking through in every direction, and altering the Neptunian secondary strata, rendering their examination rather intricate. In proceeding from Subathoo to the eastward, towards the village of Draw, we have a fine example of the coal formation presented; opposite to this village we meet with limestone dipping to the S.W. under an angle of about 50° . Resting upon it, there is a bed of slate clay, and upon it, another bed of limestone; proceeding towards the westward we meet with sandstone, and resting upon it limestone; succeeding it, slate clay and bituminous shale. At the village of Koli we again meet with limestone, and as we proceed, following the same route, passing the villages of Benti, Rugg, Gegutkun, Shulkiali to Boag, we meet with other ten similar alternations, (see Sec. II). The beds have all the same dip, the angle varying from 25° to 56° . At Draw there is a water-fall, which is precipitated over the limestone cliffs. The whole face of the cliffs here, and along the route just mentioned, having a height varying from about 150 to 200 feet, are more or less covered with calcareous sinter and tuffa, shewing, as these minerals are deposited from water, that water-falls must at one time have been general in this district. Resting upon the limestone at Draw, and in one or two other localities, we meet with an extraordinary alluvial conglomerate, composed of small angular fragments of limestone, slate clay, bituminous shale and sandstone, held together by calcareous matter deposited from the water; whether the calcareous matter is deposited by springs issuing from the limestone rock, we are unable to state, our examination being of such a cursory nature; it is however more than probable. To account for goitre, various theories have been proposed, and the one, viz., that it is owing to mineral matter (lime) contained in the water of which the inhabitants drink, has been adopted, and strongly advocated by many medical men in this country. According to this theory it ought to be very prevalent in this neighbourhood. That this explanation will account for the disease in many localities, is no doubt probable; but how are we to explain its occurrence, and that too, to a great extent in primitive districts, where the only rocks met with are gneiss, mica, slate, clay slate, and granite, and in all the springs in which no lime has been detected; moreover, in many districts in Britain and on the continent of Europe, composed entirely of limestone, and in whose springs lime abounds, goitre is unknown. We shall afterwards enter fully upon the subject, when we have examined among the Himmaleh districts, similar to the above, of which there are no doubt many. In

the meantime we beg to draw attention to the villages occurring between Boag and Draw, in order that it may be proved whether goitre is prevalent or not. In its characters, the limestone varies from compact to earthy, the latter caused by the action of the weather; its colour varies from greyish white to bluish black, and in many places we find large embedded masses of *stinkstone*, of a dark greyish brown colour, or rather we ought to say, that the limestone during its deposition, has, by the evolution of sulphurated hydrogen, been converted into this mineral; when broken, the foetid odour is strongly perceptible. For architectural purposes, and as a top dressing when burnt, to soils containing the salt of iron, or any acid matter, this limestone is admirably adapted. In this manner many of the soils in India might be much improved. In structure, the slate clay and bituminous shale vary much; in some places indurated, in others partly decomposed. Their colour also varies much; of the former the most prevalent colour is greyish black, of the latter, brownish black; sometimes the slate clay, owing to the abundance of iron, is of a reddish brown colour. At the village of Boriti the slate clay has an angle of 70° , and is much contorted; near to this there is a thin bed of slate embedded in the sandstone. In regard to the rocks of the coal formation here, and those of other localities already mentioned, we may state (as we have already done generally) that they present the same mineralogical characters as those rocks, occupying a similar position in Europe. The true position of the coal measures, which has frequently been given erroneously by authors in this country, is when the geological series is complete between the red conglomerate and mountain or carboniferous limestone; the former the Rothibugende* of the Germans is frequently wanting; when this occurs, we have the magnesian limestone superimposed upon the coal measures. In a work lately published on Indian Geology, it has been stated, that the magnesian limestone occurs, alternating with the coal strata. As such a statement is very apt to lead to a serious error, we have been induced to notice it. The rocks which the author has found, are merely the limestone of the coal formation, impregnated with magnesia; and it is a fact, proved by a vast series of experiments, that when the coal or any other limestone comes in contact with trap, it generally receives a large dose of mag-

* In England it is sometimes termed the Exeter red conglomerate. In Scotland it has never been met with.

nesia, sometimes as much as 35 or 40 per cent.* Moreover in a practical point of view, it is of the greatest consequence to distinguish these two rocks, as coal never occurs associated with the magnesian limestone, properly so called. In the same work the author talks about the discovery of shell limestone in the coal formation; no doubt he discovered limestone with shells, which frequently abound in the coal limestone; the other term however is strictly applied to a rock which is much newer and of rare occurrence, which has not as yet been met with in England. Murchison, however, has stated, that he has found its equivalent on the European continent; it occupies a position between the red marl, and the new red sandstone. It is the Muchelkalk of the Germans. To distinguish therefore between these, and at the same time to apply their proper names, is of consequence, which can be easily done by examining the fossil proper to each; characteristic of the latter, we have *Encrinilis*, *Monitiformis*, *Avicula*, *Socialis*, and *Ammonites*, *Nodasus*, &c., and of the former *Producta Serebralulæ*, or the *Ceratitis*, &c.

There is another circumstance worthy of notice here, viz. *Red Sandstone*. It is not to be supposed that when sandstone is of a red colour, it must always belong either to the old or the new red sandstone, an erroneous idea which has led to many errors, and much censure by foreign geologists. To find red sandstone alternating with the white sandstone of the coal measures (a fact which ought to be recollected by individuals engaged in searching for coal in this country,) in Europe, is not unfrequent. In lower Silisia nearly the whole of the coal field is composed of reddish brown, and cochineal coloured sandstone, with which great beds of coal alternate.† In Scotland, in the Lothians, alternations of the red and white sandstone in the coal fields are frequently met with.‡ This rock (red sandstone) seems to occur in great abundance in this country; its relations, however, have not been properly investigated. In a report drawn up for the Coal Committee by Dr. McClelland, there is much interesting information in regard to it; of the rocks which enter into the composition of the coal formation, we have already mentioned as occurring among the Himmalehs sandstone, slate clay, bituminous shale, and limestone. To make the series complete, we want, fine

* Edinburgh New Phil. Journal. Analysis of Limestone from the neighbourhood of Trap ——— Dumfriesshire, by William Copland, Esq. In the same Journal many similar analyses will be found

† Notes to the Geology of Dumfriesshire, by Professor Jameson.

‡ Ibid. Locis Citatis and Cunningham's Essay on the Geol. of the ——— Traus. vol. VII.

clay, clay ironstone, and coal, which consists of four kinds—pitch coal, slate coal, canal coal, and glance coal; the last however in the secondary series occurs in but small quantity, and is of no value. Resting immediately below the carboniferous or mountain limestone, we find among the Himmalehs a series of slates (the old red sandstone where we have as yet examined being wanting) the equivalent of Murchison's Silurian system, between which however there is no line of demarcation from the transition properly so called, viz. the grey wacke, grey wacke slate, clay slate, &c. having the same angle, dip, and direction. Shortly after leaving the Fir-tree Bungalow, we meet with the slates in general dipping to the N. E., under an angle of upwards of 70° . At Hurreepoor Bungalow we still meet with the same slates, alternating with quartz rock, and as we approach near to Syree, we meet with a series of alternations of grey wacke, grey wacke slate, clay slate, sandstone, and quartz rock. Syree village is built upon clay slate; on ascending the hill which overlooks Syree, we find the slate occurring nearly at right angles, with the usual dip to the N. E., produced by a large mass of quartz rock. In no part of the mountains which have as yet come under our observation, are the effects of the quartz rock on the grand scale more beautifully seen, than in this locality, nor could a finer example in order to study the effects, and at the same time the relations of the latter, be pointed out. On the south side of the village of Calug, which consists of a few native huts, the slate is highly inclined, and much contorted, and dips to the N. under an angle of 75° . Before reaching the village of Badari, which consists of a small bazar, and about twenty or thirty native houses, we again meet with the quartz rock, stratified, and dipping to the N.W. under an angle of 25° . Immediately above the village mentioned, close to which a mountain torrent passes, we have a beautiful section of clay slate, upwards of two hundred feet, being exposed dipping to the N. and W. under an angle of 25° .

At the first resting place used by coolies coming from Simla, a small table-shaped hill, distant about two miles from it, there is an immense dyke of basaltic greenstone, cutting through the clay slate, which at the line of junction, and for some distance, is much indurated. Cutting through the basaltic greenstone we have small dykes of syenitic greenstone, we have therefore here three different ages of formation. From this place to Simla we meet with the same clay slate, in many places however highly crystalline and passing into mica slate. The numerous metamorphisms which the slate assumes around Simla, passing from the rather earthy looking slate

of the transition series, into the highly crystalline slate, which is composed almost entirely of mica, or into chlorite slate, mica slate, &c. renders, if the individual observations are confined to this place alone, the determination of the age of the strata in general, impossible. In fact, the whole of the rocks in the neighbourhood of Simla appear to be more or less altered, but all belonging to one grand group, viz. the transition. To make out this point, we must proceed northward from Simla towards Kotgur, where ample means will be found to settle it. The changes observed are quite similar to those exhibited by the grey wacke in the south of Scotland, when in contact with Plutonian rocks.* In examining the neighbourhood of Simla, we were much assisted by Dr. Macleod, who being intimately acquainted with all the finest, most interesting, and best exposed sections, at once directed our attention to them, by means of which we were in a comparatively short time enabled to acquire a thorough knowledge of the district. To him we beg here to acknowledge our great obligations, and to return our grateful thanks.

The rocks met with in the neighbourhood of Simla, are,

- 1 Grey wacke,
- 2 Grey wacke slate,
- 3 Clay slate,
- 4 Chlorite slate,
- 5 Mica slate,
- 6 Quartz rock,
- 7 Syenite,

on both sides of Simla valley, whose direction proceeding downwards is at first nearly due east and west, it then takes a turn to the south west; there is clay slate; on its east and by north side we have the Jacko mountain, reaching to a height of 8,300 feet above the level of the sea. It is entirely composed of clay slate, in many places as near; and at the summit, we meet with large embedded dykes of quartz rock.† The ridge upon which the Simla bazar

* Journ. on the Geology of the Criffel Kirkbran and the Needle's Eye in Galloway. Wern. Tran. vol. IV. Dr. Grierson on the mica of Galloway. Ibid, vol. II. and Hay Cunningham, locis citatis.

† The Jacko is the highest mountain met with in the neighbourhood of Simla, it is considered to be about 800 feet above the Simla bazar. By experiments made conjointly with Dr. Macleod, with thermometers and boiling water, we ascertained that his house, situated at the foot of Jacko, was 7,800. By similar experiments we ascertained the height of Subathoo 4,480 (Mr. G. Clerk's house at Bunnassur 5,600), on all occasions we used rain water if it (or snow water which is the best) is not used, the result given is usually inaccurate, common spring water containing a quantity of foreign ingredients, it ought therefore never; if possible, be had recourse to.

rests is also almost entirely composed of clay slate, dipping to the south east under an angle of 25° . In Section No. III. we have given a view of the strata extending from Dr. Macleod's house, at the foot of Jacko, immediately above the bazar, to Lord Auckland's Road.

The clay slate varies in colour from bluish black to ash grey, with the various intermediate tints. In structure, it varies from rather earthy to highly crystalline, and in its transitions we have it passing, as in Simla valley, into chlorite slate; in other places, as in the Auckland Road, into quartz rock, the latter of which frequently alternates with it, in thin layers, forming mica slate. In composition, as already stated, it frequently consists of nothing but mica. In the section of the Auckland Road, we meet with a large mass of slaty quartz rock, formed by thin layers of clay slate alternating with the quartz rock; in fact it is almost identically the same in mineralogical characters, as the rock met with in the Lockken district in Kirkcudbright, Scotland; from the first time we examined this section we were instantly struck with the identity, which a further examination fully verified, of the induration and alternation of the clay slate in junction with quartz rock; we have a beautiful example at the first water-fall below Simla. Here there are large masses of quartz, forming dykes of many yards in thickness in the clay slate, whose greyish white colour contrast finely with the dark bluish colour of the latter rock. The fall is a perpendicular height of about 140 feet, over which, during the rainy season, a very considerable body of water is precipitated, forming an interesting sight, well worthy of the attention of the traveller; with Dr. Macleod we also visited and examined the other water-fall, some distance below the one mentioned, and found the rocks, &c. to be similar. In tracing the strata in the bed of the river from it towards Simla, we meet with many junctions, and it is here we find the clay slate passing into chlorite slate. The rolled masses, or boulders, principally consist of quartz rock, syenite, clay slate, chlorite slate, &c. In a valley bearing north and by east from Anandale, there is a quarry of clay slate, which is used as a roofing material for many of the houses in Simla, the ronge, huge, thick and unshapely masses employed are quite in unison with the mineralogical operations carried on in other parts of India; in fact it is quite remarkable that the beams are able to support the enormous weight superimposed. We have already stated that no where in the immediate neighbourhood of Simla is grey wacke to be met with; but as we proceed northward towards Kotgur, about one and a half miles, we

meet with a series of alternations of grey wacke, grey wacke slate, and clay slate, having the same dip and direction as the slates just mentioned, proving that they must be of the same age, and that they were up-raised contemporaneously. How far this series extends towards the north we have not as yet ascertained; as far as we have gone, viz. upwards of four miles beyond Simla, we have still found it.* Four miles to the south of Simla we have already noticed a similar series of alternations. In its characters, the *grey wacke* is characteristic, consisting of a basis of clay slate, with imbedded fragments of clay slate, quartz rock, flints, &c. The size of the embedded fragment varies from upwards of six inches, to so small as to be almost imperceptible to the naked eye, and forming gradually a transition from the grey wacke to the grey wacke slate, and from it into clay slate, in which no fragments exist. In No. V. we have given a section exhibiting the different alternations from the most northern point to which we have as yet gone to Simla. It is rather remarkable, that here, where we find the grey wacke unaltered, quartz rock occurs in but small quantity. The clay slate which alternates with the two rocks mentioned, is identical in its mineralogical characters with the clay slate of Simla, when not in junction with quartz rock.

Quartz rocks occur in three different forms; as imbedded masses in the slate, as dykes or veins, and in masses exhibiting the regular stratified form; the seams of stratification being as well marked as either those of clay slate, or grey wacke slate. In structure it is compact or granular, much more frequently the former. The colour is generally greyish white; sometimes, owing to the presence of iron, it is reddish brown, blood or brick red; in a few instances we have observed it of a rose red colour, void, however, of the fine translucency observed

* Since the above was written we have in company with Dr. Macleod examined the country as far as Tagoo; the predominant rock is still the clay slate; near to Mabassoo we meet with two alternations of quartz rocks. In this route the clay slate is frequently formed contorted in a most extraordinary manner. The dip is generally north and west, the angle varying, in some places it was about 70°. The magnificence and grandeur of the view of the snowy range from Mabassoo can be better imagined than described, and the optical delusion is so great, as to make it appear not more than six or seven miles distant. In the foreground you have here and there thick wooded districts, whose dark shade contrasts beautifully with the bleak white, but majestic peaks, whose snow-clad summits tower into the heavens, and defy all human exertion to surmount. Here also you see well what we have already stated, though with some doubt, viz. the *parallelism of the subordinate mountain ranges and valleys*.

in the rose quartz* met with in Bavaria, Saxony, &c. That the quartz rock owes its formation in many places to Plutonian action, is fully proved by the observations already made, and by many other sections not yet noticed. Probably the best to illustrate this, is to be met with on the road leading from the small church of Simla down to the river torrent. Here we have a large dyke of quartz rock, cutting through the slate, and altering it; superimposed there is a large mass of slate lying upon the outcrop of the dyke, unconformable to the other slate, and at the same time converted into a highly crystalline mass, which seems to have been torn off from the subjacent rock at the time when the quartz rock came from below (see section VI.); moreover to meet with large masses of slate imbedded in the quartz rock, is not an uncommon occurrence. In the Simla road, immediately above the cantonments of the Goorka battalion, there is a good example. The alteration, shifts, &c., met with in the clay slate when near the quartz rock (see section VII.), is also another proof of the existence of Plutonian action, and moreover we find it passing imperceptibly in the new road, or Auckland Road, into syenite. Here also imbedded in the quartz rock, we frequently meet with veins of quartz of a much whiter colour, pointing out in a striking manner the shifts which have taken place (see section VIII.) That however in other places it is Neptunian deposition, is evident from its regularly stratified form, and at the same time when in contact, not altering the clay slate.

The last rock we have to notice is *Syenite*. It occurs in only one locality, in the form of a large amorphous dyke, intersecting and altering the clay slate, it passes gradually into quartz rock. In structure it is small, granular, and is composed of quartz and hornblende, the former of a greyish white, the latter of a leek green colour. As we have not examined sufficiently minute the trap† mentioned, we shall take another opportunity of giving an account of them.

* The rose quartz of mineralogists, owes its colour to manganese, and is much prized, when pure, as a precious stone; it is however very liable to fade, if much exposed to the air. Jam. Manus, Sect.

† At Rajmahul, where it is stated existed the capital of the Mahomedan power in Bengal, in the reign of Akbar, towards the end of the sixteenth century, we find among the ruins some fine examples exhibiting the polish, which some of the trap are capable of receiving. Thus, in the *Sungi Dullau*, or marble hall, erroneously so called, there are still existing some enormous slates of beautifully polished basaltic clinkstone, ornamenting the doorways, walls, &c. which by the ignorant have been considered black marble, and thus given rise to the erroneous name. In every work we have consulted, this term is used. It is also stated that the ruins principally consist of granite, a word too frequently used as a cloak for ignorance. What we principally saw were bricks and trap.

In regard to simple minerals met with imbedded in the rocks, our list is but small, consisting of

Calcereous Spar,
———— Sinter,
———— Tuffa,
———— Quartz,
Dodecahedral Garnet.
Red and brown Hematite.

In addition to the localities mentioned of the iron ores, Dr. Macleod pointed out to us several masses in the bed of the river torrent in Simla valley, shewing probably, as the fragments were angular, that a vein, or veins, occur near, of little value, however, from their impurity. In regard to the garnets, it is rather a remarkable fact that we have only met with them in those localities where the clay slate appears to have been much altered; the same has been remarked in Europe by Sedgwick, and Lyell. As yet we have no account of the minerals met with among the Himmalehs; those already noticed amount to not more than twenty or thirty, a statement truly remarkable, pointing out how lamentably this department has been neglected; in such a mighty range we ought to meet with an immense number of minerals. In the collection of the Asiatic Society of Calcutta, we found several minerals which have never as yet been noticed as occurring in India; but whether these were found in this country, or imported, is a question, no labels being attached, and Mr. J. Prinsep in England. Calcereous spar occurs frequently in the form of veins in the clay slate. Of the other minerals mentioned, the localities have already been given.

Having now noticed, both generally and particularly, all the rocks and minerals which have as yet come under our observation, we shall make a few remarks in regard to that formation (the most important of all formations) which forms such large tracts of the Himmalehs; I allude to the coal formation. From what has been stated by authors, and from what we have already seen, it is not at all improbable that there is a belt composed of those rocks, extending along the whole base of the Himmalehs proper. The furthest point, to the westward of which we have notice of these rocks, is Attock, and to the eastward, probably Darjeling; comprehending about 17° of longitude; that, however, it extends further in both directions, is more than probable. That no bed of coal worth working has

* Near Subathoo imbedded in the slate, sulphate of lime or gypsum is found. From this rock the celebrated Plaster of Paris is made.

been met with in such a vast tract of country, results not from its absence, but, probably, from the partial manner in which the country has been examined. Captain Herbert in one of the vols. of the Asiatic Society's 'Trans. has given a paper on the occurrence of coal in the Indo-Gangetic mountains, in which he comes to the conclusion, that all the sandstones and other rocks noticed, belong to the red wacke series, but from data utterly groundless; and remarks in regard to the probability of finding the coal formation, that the indications are unfavourable; we shall however quote his own words—"it will be perhaps asked," he says, "is this coal, of which the traces are probably widely diffused in our sandstone range, likely to prove of any value, or do these many indications afford any ground to hope for the discovery of more extensive and profitable deposits?" To this it may be replied, that the considerations upon which are founded the hope of discovering, in the neighbourhood of these mountains, the true coal formations, are quite independent of its occurrence under this type and in this form; if any thing perhaps, they are rather unfavourable to the expectation of eventually discovering beds of the true coal formation, for it has been noticed, that in those countries in which the coal beds are most largely developed, as in England, the traces of the mineral in the superincumbent sandstone are rare, if not altogether wanting; while on the continent, where the true coal beds do not occur, small seams or veins are frequently met with in this rock. To find traces of coal in superincumbent sandstone, in districts where coal has not been found, is one of the strongest evidences, if not the most important, that coal is present. In fact nothing is more common in a coal district, than to see disseminated through the sandstone, or occurring in small seams, coal prior to reaching an important bed; we may state that from it we are entitled to infer, that if a shaft is sunk sooner or later, we shall arrive at the bed of coal. In examining a coal district, advantage should be taken of all the streams that occur in a district, for by so doing, a transverse section of the strata is obtained, and frequently thus the outcrop of a bed of coal is perceived. It is also of importance to examine the masses which occur in the stream, coal in such localities, frequently occurring at a considerable distance from the bed in situ. If the remarks of Captain Herbert were applicable, all the observations made by geologists, mining engineers, &c., would be void. In the same paper we are told, that grey wacke is considered as synonymous with the old red sandstone by most geologists; who these geologists are he alludes to, we do not know. Also that at Delhi

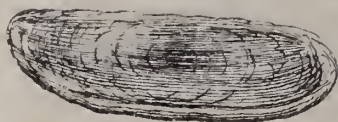
and other places there is a primary sandstone ; we take notice of these statements, in order to shew that Captain Herbert made the above statements prematurely. It is impossible for any individual at all acquainted with the mineralogical characters of rocks, and the relative position which they occupy in the crust of the earth, to attempt to prove that in one continent rocks with identically the same characters and fossils, are different from those in another. To find slate clay, bituminous shale, limestone, and sandstone, as the equivalent of the red marl, upon the evidences he has given, is more than premature, originating however, in all probability, from the description of the rocks in the Punjaub, which (probably without a proper examination) have been considered as the continuation of those to the eastward. It has been stated no doubt that no bituminous shale occurs, but we have shewn that it, as well as limestone, occurs in great abundance, the former of which rendering the probability of the existence of coal in quantity, more probable. That the equivalent of the red marl may be found, and that too in some of the districts mentioned by Herbert, is possible ; and if such should turn out to be the case, it is well worthy of examination, seeing that it is in this formation, the great beds of rock, salt, and gypsum, or sulphate of lime are found.

To discover coal in quantity in the neighbourhood of the Sutledge, or any place where there is easy access of carriage in that direction, would no doubt, in a short time, be of incalculable benefit to the country at large. In a short time the Indus will become an immense resort for trade, and we may expect it soon to be covered by all kinds of vessels ; but those to which the European looks forward, whose power and rapidity of motion have so approximated Europe, will ever take the lead ; and until stream vessels are impelled by some other moving power, coal will ever be considered as one of the greatest benefits conferred on mankind ; moreover in connexion with the coal we may expect to find clay iron-stone, which will also prove of the utmost consequence. It is from this ore that three-fourths of the iron is obtained in England. It has been met with at Darjeling, and several other places in India, but from the want of fuel and flax to reduce it, we do not think it has ever been made use of. If however we look at the mineral resources of this country, what are they at the present moment ? nothing to what they ought ; a spirit of inquiry is now happily gaining ground ; sanctioned by Government a coal committee has been appointed. To its proceedings therefore we look forward

Wooden Tray

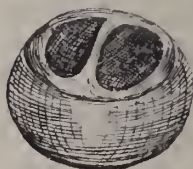
from 2 feet to 8 inches long

1/2 inch thick



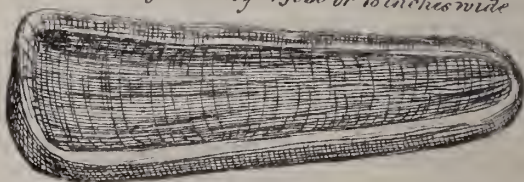
Wooden Bucket

7 or 8 inches diam.



Wooden Trough

3 or 4 feet long 1 foot or 18 inches wide



with interest, and hope soon to see through its exertions, a spirit of inquiry stirred up throughout India.

(Signed,)

W. JAMESON.

AMBALLA,

13th October, 1839.

ART. V.—*Note on the process of washing for the Gold Dust and Diamonds at Heera Khoond. By Major J. R. OUSELEY.*

The day before yesterday, I visited the Heera Khoond, and saw the process of washing for gold dust and diamonds. A set of fishermen have villages free from rent; on this service, men, women, and children are employed. The women alone wash, the men and children bring the gravel and sand in wooden trays, and place it in the trough, which is open at one end, with a gentle inclination towards the river, on the edge of which the women sit. With their left hands they stir up the gravel, and with the right pour water out of a wooden basket-looking bucket gently over the upper end; it runs out into the river, the larger pebbles and gravel are thrown over, and the finer sand, on the trough being full, re-washed until little remains, when it is removed into the wooden trays, and by dipping them under water, and shaking them about, the gravel gradually falls over, leaving only gold dust. They detect the diamonds at a glance, as they wash. One I saw about the size of a large grain of wheat, clear and bright; but these are not to be purchased, as they are the Raja's property. The gold they are allowed to dispose of; which they do at 12 or 15 rupees per tola. The veins are, I am convinced, some distance off, as the grains of gold appear flattened by collision, in rolling among pebbles. I have the pleasure to send 3 mashas, ($\frac{1}{2}$ a tola not yet brought), and some of the rocks about the spot where the diamonds and gold dust are found. The *Heera Khoond* is an island, about a coss long, and one or two hundred yards wide in the Mahanuddy, seven miles, seven and a half furlongs from the eastern end of Sumbulpoor. The *Heera Khoond*, is that part of the river, which runs south of the islands. The diamonds and gold dust are said to be washed down the *Ebee* river, about four miles above the *Heera Khoond*; but as both are procurable as far as Soonpoor, I am inclined to think there may be veins of gold along the Mahanuddy. It would however, I think, be very desirable to have this part of the country properly examined, which it never was yet. Gold washings might be under-

taken on mechanical principles, which would, by reducing the manual labour, make the speculation highly profitable in gold dust alone, setting aside the diamonds.

The season for washing is after the river subsides, on the rains ceasing ; but they occasionally continue until the rains again interrupt their labours. I have *fancied* that a graduated wire-sieve washing machine might be made, larger at the top, and smaller as the sieves approach the bottom, which would in the passage of the debris, flung in at the top one, to the bottom (a wooden tray) keep the more minute particles in suspension, or permit of the sieves retaining in succession the pebbles of gravelly matter ; all earthy particles being carried away, if the machine were placed in a gentle stream, the gold dust would be found in the tray. Each sieve should be carefully examined for diamonds, on the machine being full ; the machine might be six feet long, two wide, and six or eight high. The sieves being a foot or 18 inches apart, it would be necessary only to take up the top and second sieves often, the lower ones would take longer to fill ; the machine should be made so as to admit of its being shaken constantly, and hung up in water six or seven feet deep, where the current would be gentle.

J. R. OUSELEY.

Camp, Sumbulpoor,

Feb. 14th, 1840.

P.S.—There is also gold dust, in the Brahminee river, about six marches east of this, but no diamonds.

The women sit along the edge of the river, facing inwards, and gradually form little mountains of pebbles. The number employed is very great, but the speculation is not very profitable now.

ART. VI.—*Proceedings of the Asiatic Society.*

(Wednesday Evening, the 4th March, 1840.,

The Honorable Sir E. RYAN, President, in the chair.

The Proceedings of the last Meeting were read.

MESSRS. JAMES COLQUHOUN, H. SWEETENHAM, C. K. ROBISON, T. C. CADOGAN, and R. H. MATHEWS, proposed at the last Meeting, were balloted for and duly elected Members of the Society.

M. RENAUD proposed at the last Meeting, was upon the favourable report of the Committee of Papers elected an honorary Member of the Society.

The Rev. A. W. STREET proposed by Dr. O'SHAUGHNESSY, seconded by Mr. SUTHERLAND.

Rajah KISHTNA NATH ROY proposed by Mr. SUTHERLAND, seconded by Dr. O'SHAUGHNESSY.

Read letters from Messrs. A. PORTELS and W. A. GREEN, withdrawing themselves from the Society.

Read a letter from Messrs. W. H. ALLEN and Co. intimating their having forwarded the busts of Sir Wm. JONES and Mr. COLERROOKE, per ship "Felicity." (The busts arrived on the 20th April in perfect safety.)

Read a letter from James REYNOLDS, Esq., Secretary to the Oriental Translation Fund of the Royal Asiatic Society, stating that arrears of the Society's subscriptions were due to the amount of 42*l.*, from 1836 to 1839 inclusive.

The Secretary informed the Meeting that the Society's Book Agents in London have been instructed to discharge the claim in question.

Library.

The following books were presented:—

The East Indian Journal of Literature, Science, and the Fine Arts, No. 1, by R. C. WOODS, Esq. L.L.D.—*by the Author.*

Esquisse Generale de l'Afrique by Mr. M. D' AVERGAC,—*by the Author.* through R. C. Woods, Esq., L.L.D.

Proceedings of the Bombay Geographical Society, May, 1839,—*by the Society.*

Proceedings of the Astronomical Society, vol. 4, No. 24,—*by the Society.*

English and Chinese Vocabulary, by R. MORRISON, D.D.—*by Messrs. Thacker & Co.*

A brief account of the Chronometer, with remarks on those furnished by PARKINSON and FRODSHAM to the expeditions of Capts. ROSS, PARRY, SABINE, KING, LYON, FOSTER, and other distinguished navigators—*by Mr. Frodsham.*

Madras Journal, Nos. 21, 22, 23 and 24—*by the Madras Library and Auxiliary Royal Asiatic Society.*

The following was received from the Booksellers:—

Lardner's Cabinet Cyclopædia, Biography, Literary and Scientific men, vol. 2.

Literary and Physical.

Major J. R. OUSELEY forwarded a short notice of the process of washing for the gold dust and diamonds at Heera Khoond, with specimens of the gold dust.

Read a letter from Capt. T. S. BURT, forwarding copy of a facsimile taken by him at Pajore.

Read a letter from Major T. JERVIS, (Engineers) forwarding a paper on the cotton at Gujerat, by Mr. VAUPELL.

Read a letter from R. C. WOODS, Esq. forwarding a paper on the Introduction to the study of the science of Ethnology, or the Natural History of the human race.

Read a letter from Dr. N. WALLICH, forwarding for presentation on behalf of Mr. PARKER a specimen of the timber of the "Royal George," blown up in Colonel PASLEY'S operations.

Various specimens of minerals were presented by Major J. R. OUSELEY.

A sword fish and a hammer-headed shark, were presented by E. D. FABIAN, Esq.

An alligator, presented by Mr. R. S. HOMFRAY.

Museum.

Pursuant to the resolutions of the last Meeting, the Secretary then laid before the Meeting the rules framed by the Committee of Papers, regarding the office of Curator of the Museum.

At a Meeting of the Asiatic Society of Bengal, held on the 5th February, 1840, it was proposed by Sir E. RYAN, seconded by H. T. PRINSEP, Esq. and unanimously agreed,

That the office of Curator to the Society's Museum be held in future on the following conditions—1st. Two hours at least to be devoted daily to the duties of the Museum. 2nd. Monthly reports to be made to the Committee of Papers. 3rd. The objects of Natural History belonging to the Society's collection not to be removed from the Museum. It was further decided, that the Committee of Papers should report to the next Meeting, on the nature and extent of the duties the Curator is to undertake, with reference to the office as held in other Museums.

Report of the Committee of Papers.

The Museum of the Asiatic Society of Bengal may be considered to embrace two very distinct departments : 1st. That of Oriental Antiquities, Literature, Architecture, and Numismatics. 2nd. That of Natural History.

It would be of great importance to secure, were it possible, the services of a Curator conversant with both these divisions ; but such a combination of acquirements is so rare, that the Society must trust the arrangement, elucidation, and preservation of the articles appertaining to the first division, to the honorary services of the Oriental Secretary, the Librarian, and Pundits.

In the department of Natural History, it must be borne in mind, that the Curator's great object should be, to arrange and extend the Society's collections so as to make these available for the information of the student, conducive to the general illustration and advancement of science, and worthy of the place the Society holds among learned institutions. Viewed in this light, it is of far more importance to the Society that their Curator should assiduously apply himself to the collection, naming, and arrangement, of procurable specimens of the animal and mineral kingdoms, than that he should specially devote himself to the minute elucidation of any sub-division of these subjects.

By the elaborate investigation of a group or family, he may doubtless distinguish himself, and gain high individual reputation, but his utility to the Society would be far greater, by his applying himself to the humbler duties we have specified; moreover, it appears to us that these duties are in themselves more than sufficient to occupy the Curator's time, were it even to be entirely devoted to their discharge.

Our collection of minerals is an utter chaos, though rich in anonymous specimens, —valuable in themselves as illustrations of abstract mineralogy, but devoid of interest in a geological or geographical light, owing to the neglect with which they have been treated by some preceding Curators. It appears to the Committee of Papers, that the first object of the Society, in remodelling its Museum, should be, to form a grand collection of minerals and fossils, illustrative of the geology, geography, and palæontology of our British Indian possessions.

A few of the existing minerals, and some superb fossils in our Museum are available for this object, but it is clearly within the scope of the Society's influence to procure, within a few months, collections of specimens from every part of India, and in such numbers as would find the Curator in ample employment. While waiting for these additions to our collections, he should proceed to name and label those already in our possession. There is no need for delay for the preparation of cabinets. The specimens should be named, labelled, wrapped in paper with a number affixed, and then packed in boxes, until the cabinets are ready.

Duplicates of all specimens should be preserved for verification and analysis. Triplicates should be retained, wherever practicable, for presentation to other Museums in exchange.

The monthly reports should be a statement of progress in this duty, and affording a catalogue of the minerals adjusted. The specimens themselves should be exhibited at each Meeting.

This duty the Committee think should supersede all others for the first few months of the Curator's employment, meanwhile his subordinates would conduct the arrangement of such specimens of the animal kingdom, as might require immediate attention.

All correspondence connected with the Museum should pass through the Secretary's Office, in conformity with the practice of similar institutions. It seems to the Committee of Papers an anomalous and inexpedient practice to commit the whole management of exchanges and similar transactions to the Curator. The suggestions of that officer will be always received with due attention and respect by the Committee; but it is manifest that without their being referred to it, the Committee cannot be responsible for the expenditure which the Curator's measures and correspondence may entail, for the views on which he may act in the management of the Museum, nor for the light in which this department of the Society's labours may be regarded by scientific men, and institutions in other countries.

It seems necessary too, to stipulate that all memoirs or papers drawn up by the Curator for publication, as well as plates, models, &c., on subjects he may have investigated *in discharge of his duties*, should be in the first instance placed at the disposal of the Committee of Papers, also that all proofs of such papers pass through the inspection of the same body.

The Committee are led to this suggestion by the circumstance of a fly-leaf having been prefixed, without their sanction or knowledge, to the last volume of the Transactions. Although containing nothing from which the Committee would dissent, the

precedent is one which they are desirous of avoiding, as it obviously may lead to many objectionable results.

The Committee deem it highly desirable to secure, if possible, Dr. M'Clelland's valuable services on the terms they have now set forth. His acquirements in various departments of Natural History, his zeal for the promotion of science, the liberality and disinterestedness he has evinced in his past connexion with the Museum, entitle him to be preferred to most competitors for this appointment. The Committee have endeavoured in this report however to discuss without bias towards any individual, the stipulations for tenure of office, which they deem most conducive to the interests of the Society and of science, and most likely to receive the approbation of the Government, through whose liberal grant the occasion of this discussion has arisen.

In the event, however, of Dr. M'Clelland's declining to accept the situation on the terms now proposed, the Committee recommend that candidates be invited to present themselves, that the testimonials of such candidates be examined and reported on by the Committee of Papers, and finally considered at a General Meeting. That the individual selected be appointed, but for twelve months, and his permanent appointment be made dependent on the ability and industry evinced during the probationary period.

Should no candidate of sufficient acquirements present himself within three months, the Committee recommend that the President be requested to communicate with the proper scientific authorities in Europe, authorizing the appointment and dispatch to India of a competent individual, bound to serve the Society for a period of five years, and subject to the rules herein expressed.

The Committee would not be disposed to extend to any other individual but Dr. M'Clelland, the privilege of devoting but two hours daily to the Museum, and would require four hours at least, actual attendance at the Museum, from whatever other candidate might be selected.

EDWARD RYAN, *Kt. Chief Justice of Bengal, & President of the Society.*

H. T. PRINSEP, *Member of Supreme Council, and Vice President.*

W. P. GRANT, *Civil Service.*

H. TORENS, *Civil Service.*

J. C. C. SUTHERLAND, }
W. B. O'SHAUGHNESSY, } *Acting Secretaries, &c.*

D. McLEOD, *Colonel of Engineers, and Vice-President.*

D. STEWART, *Superintendent General of Vaccine.*

DAVID HARE, *Commissioner of Court of Requests.*

H. W. SETON, *Kt. Puisne Judge, &c.*

W. H. FORBES, *Major of Engineers, and Mint Master.*

N. WALLICH, *M.D. Superintendent of H. C. Botanic Garden.*

Minute by Dr. GRANT, Apothecary to the Honorable Company.

I regret that I cannot concur in the whole of this report. Agreeing with much of the general principle that pervades it, I dissent from its application to our peculiar circumstances. The report closes with a well merited expression of the desirableness of securing, if possible, the services of a zealous, able, industrious and disinterested naturalist upon the spot, and yet purposes to fetter him with rules, which I fear might damp his ardour and circumscribe his usefulness, without any commensurate benefit to the institution, or perhaps alienate him altogether from a situation which he is well qualified to adorn.

The report proposes the consideration of the subject entirely on abstract principles, without reference to individual fitness here, or convenience of availing ourselves of such at once; but sincerely believing, as I do, that the readiest practicable plan is to avail ourselves of the intellectual means at hand, rather than incur the delay of waiting for remote and uncertain materials, I am averse to the adoption of rules which I fear may deprive us of Dr. M'CLELLAND's services.

The three suggestions contained in the opening paragraph of the report appear to me objectionable, for the reasons to be stated as I proceed. 1st. I would not tie down Dr. M'CLELLAND (supposing him ready to undertake the office of Curator) to two hours daily in the Museum. Though it is not unlikely that at an average Dr. M'CLELLAND would devote so much time to the duties of the Museum,—yet I conceive that the precise locality of duties bearing in the Museum, is of less importance than their being essentially well produced and looked after, not merely in the Museum, but out of it; since Dr. M'CLELLAND might labour very usefully for the Museum in his own house, without a scrupulous and inconvenient measuring of time within the walls of the Museum; and if left to himself might occasionally extend to more even than two hours. 2nd. Monthly reports for some time to come would almost entirely be confined to mechanical arrangement. Quarterly or half yearly reports, I conceive, would answer every useful purpose, and give less trouble. Let the Committee of Papers be a Committee of Management, and by frequent visits to the Museum obviate any tendency to inaction on the part of the Curator. 3rd. The non-removal under any circumstances of articles from the Museum, would impose a tantalizing restriction. A Museum, especially in India, is not the most favourable place for making minute observations, or recording results and circumstances. There may be several articles that the Curator would like occasionally to carry home, to examine quietly in the privacy of his own study; and I should be sorry to cramp any Curator's convenience by depriving him of this indulgence. To insist upon it, would be like the rule that holds in some libraries, that books should be looked at, only on the premises. That rule may be a very proper one in Europe, but I do not think it at present applicable here. Apply the same rule to numismatology, and it would be found very prejudicial. Had it been strictly acted upon in that branch, I question whether Dr. WILSON and Mr. J. PRINSEP (the latter especially) would have effected such splendid results. Neither would I pay our Curator the bad compliment of implying, by such a restriction, that he would not take proper care of specimens. Instead of this, I would permit him to carry away what specimens he required, for a reasonable time; the vacant space being occupied with a card or half sheet of paper, bearing the number and character of the article, and the date at which it was borrowed, with the words, "taken by Curator."

Quite concurring in that part of the report, which states that the Curator's great object should be generalisation of several subjects, and not special devotion to minute observation of a sub-division, yet as I conceive that the two objects are perfectly reconcilable, I have no doubt that Dr. M'CLELLAND would pay due attention to both; neither do I imagine that the claims of speedy and effectual mechanical arrangement would at all suffer in the hands of Dr. M'CLELLAND, or take up so much time, as the proposal to tie down that gentleman's passing two hours daily in the Museum, would seem to indicate. In conclusion, as far preferable to the plan of sending in three months to Europe for a Curator, and procuring one who after his arrival in India would very likely become discontented at finding himself tied down for five years upon a salary which may sound imposing in Europe, but would be only a pittance for a man of education in India, and scarcely upon a par with the pay of some mechanics, I would prefer closing for a twelvemonth with Dr. M'CLELLAND, or with any other qualified gentleman in India, to whom such a limited salary might be an object—should the conditions of offering the situation to the former be such as to make him decline it.

J. GRANT.

Calcutta, 15th Feb. 1840.

TO J. C. C. SUTHERLAND, ESQ. AND DR. O'SHAUGHNESSY,
Officiating Secretaries of the Asiatic Society.

GENTLEMEN,—I was favoured on the 19th with your letter of the 17th inst. inclosing a copy of a report of the Committee of Papers as to the manner in which the duties of the office of Curator to the Asiatic Society's Museum are in future to be conducted, and calling upon me rather prematurely to decide as to whether I can accept the office under such circumstances or not.

It appears to me that before my decision could be of any avail, the rules proposed by the Committee should be passed into law, and authorised by competent authorities. For my own part, I conceive the rules to be altogether vexatious, and so little calculated to promote the interests of the Museum, that I feel assured they will never be sanctioned.

2. In the next place, when the funds of the Society were inadequate to defray the expense of the usual salary, the Museum was just as valuable as it is now, and yet the duties were entirely left to me without restriction; but no sooner was the grant of an adequate allowance made by the liberality of the Government, than all became Curators; and I was supposed to be no longer competent to hold the office except under stipulations quite unheard of, in similar cases.

3. In vain did I even agree to the required stipulations in the sense in which those who proposed them, explained at the last Meeting of the Society that they were intended to apply, for as one scruple was removed, a new one was suggested,* as if either to

* Although I am the only officer of the Society who has but one other office to attend to, yet one of the first obstacles suggested was, that I had not time enough to devote to the duties, and although the officer who suggested this holds four or five appointments and is still a candidate for as many more as he can secure, he has time enough withal to know more of my business than I know myself.† (*Dr. M'Clelland's note.*)

† Dr. M'Clelland forgets that he holds, or did then hold, *three* offices. Namely, Deputy Apothecary; Assistant Opium Examiner; and Secretary to the Coal and Iron Committee—all salaried appointments;—a short time before this discussion he was salaried Curator to the Museum also, to which he had no objection to be re-appointed. The first of the appointments above mentioned requires actual attendance at office from eleven to four daily.—*Ends.*

drive me out of office, or reduce the situation to a state of dependance quite incompatible with the responsibility attached to it.

It is also to be recollected, that the very first intimation I had of the liberality of the Government, in granting an allowance for the situation I held, was accompanied with a proposition to provide another in my place.

4. As the report proposes to have framed the duties of the office to which such new pecuniary interest is attached, on the established usage of other Museums, I must be permitted to point out the error into which the *Rapporteur* seems to have fallen.

5. The Museum of the Royal College of Surgeons in London is placed under a Board of Curators, over which the Members of the College have no authority. I allude to this Museum as one in which the Government have an interest, and in all other Museums to the support of which the Government contribute, the Curators are equally independent. This Board may not only cut and dissect the specimens in such manner as may be deemed essential, but may send them to lapidaries and others to do the same; and Mr. Clift as well as Mr. Owen may make use of the results, the same as if they had been derived from their own private specimens.

6. The Museum at the India House is placed entirely, I believe, in the hands of its keeper, who may not only make such use of his descriptions of the objects contained in it as he conceives most likely to promote the ends of science, but exhibit those objects when necessary to the Societies of the metropolis.

7. Can the Committee of Papers reconcile this, with the stipulations they require from their Curator? e. g. "that all *memoirs* or *papers** drawn up by the Curator for publication, as well as plates, models, &c. on subjects he may have investigated in the discharge of his duties, should, in the first instance, be placed at the disposal of the Committee of Papers; also, that all proofs of such papers pass through the inspection of the same body." The reason assigned for this very modest stipulation is perfectly ludicrous, and shows how unfit the Committee is to legislate in such matters, namely, that of a "*fly-leaf* having been prefixed without their knowledge or sanction to the last volume of Transactions. Although containing nothing from which the Committee would dissent, the precedent is one they are desirous of avoiding."

8. The Committee of Papers should surely have been aware that it is the Secretary, and not the Curator, who must be held answerable for irregularities of this kind, and yet the odd remedy they would apply is, that of depriving the Curator of the literary property that every one has a right to enjoy in his own free labours. How that could keep "fly leaves" out of the Transactions, I am quite at a loss to know.†

9. As the Committee do not profess to think much of "the elaborate investigation of a group or family," we cannot be surprised that they should not be disposed to encourage such a waste of time; and hence the clause preventing the removal of objects of Natu-

* The only literary work a Curator is expected to perform in the execution of his duty is the preparation of a catalogue of the collection under his charge. Whether that be a *memoir* or a *paper* I must leave to the *legal* learning of those who would draw the distinction. Even with regard to a catalogue, I would advise the Committee to imitate the Council of the Zoological Society of London, and declare, that they do not "hold themselves responsible for the nomenclature, and opinions expressed in this publication," i. e. the catalogue. (*Dr. McClelland's note.*)

† The proof of the very unusual "fly leaf" alluded to, and which contained a glowing panegyric on the *Bishop's College printing Press*, was never sent to the Secretaries for inspection.—EDS.

ral History from the Museum. Why, it was only at the last meeting of the British Association, that Dr. Buckland announced the intention of Messrs. Hutton and Henslow to continue the fossil flora of Great Britain, and of their requiring "the loan of specimens from the Geological Society, which would be carefully returned after drawings had been made of them."

10. Again, the Committee require that all correspondence connected with the Museum should pass through the Secretaries office, "in conformity with the practice of all similar institutions." Here the Committee no doubt evince the same intimate knowledge of the practice of other institutions, as in the instances already referred to.

It does not appear to have occurred to the Committee, that the Curator being a naturalist, can have little correspondence not connected with the Museum, so that to comply with this rule, he should require his friends to address him through the Secretary.

11. The Committee say, "our collection of minerals is an utter chaos," a statement which is not the fact, for they are all arranged; a Committee that would lay down rules for the direction of a Curator ought to know the difference between minerals and rocks. "Though rich," say this Committee, in "*anonymous* specimens valuable in themselves as illustrations of *abstract* mineralogy, but devoid of interest in a geological or geographical light, owing to the neglect with which they have been treated, &c." We can easily understand that the Committee may have been ignorant of the names of many minerals in the collection, especially as they do not seem to know the difference between minerals and rocks, but it does not follow that such minerals are "*anonymous*;" in fact the use of the term, as the Committee have applied it, evinces a total want of information on the subject; a mineral is not *anonymous* because it is without a label, any more than a man would be so when without a card in his pocket, with his name written on it. A person acquainted with either minerals or men will always know them, whether labelled or not.* Yet this is the Committee who are ready to take the management of the Museum into their own hands, and as they say themselves, examine the claims of such candidates as may offer for the Curatorship within a period of three months.

12. "It appears," they say, "that the first object of the Society in remodelling the Museum, should be to form a grand collection of minerals and fossils, illustrative of the geology, geography, and palæontology of our British Indian possessions." This sounds well, but we are at a loss to know how *minerals* and *fossils* could illustrate *geography*, and had always supposed that palæontology was merely a branch of geology; but perhaps the Committee intend to remodel the Sciences as well as the Museum. "A few *existing* minerals" (could there be any other kind)? This is the report of a Committee of Papers of a learned Society, claiming an authority quite unprecedented over the labours of others, it is therefore of importance before their claims be sanctioned, to see how far the scientific character of the Society would be safe in their hands) "and some superb fossils in our Museum are available for this

* This passage is quite explanatory of the views on which the writer acts, and of those by which the Committee of Papers are led.—As Dr. M'Clelland knows every mineral a glance, he thinks that quite sufficient. The Committee desire the novice to be supplied with the means of acquiring a little of their Curator's knowledge. As to the quibble regarding rocks and minerals, if Dr. M'Clelland knew the difference between a class and an order, he would be aware that every rock is a mineral, though every mineral is not a rock.—EDS.

object," i. e. for making a grand collection, but as the things in question are already in the Museum, they are not merely "*available*" for the object in view, but constitute so much of the object itself already accomplished.

13. The Committee continue, "while waiting for these additions to our collection, he," the Curator, "should proceed to label these already in our possession." It is within the recollection of the Society, that I stated eight months ago, that I could do nothing with the geological collection until cabinets were first provided: these were accordingly sanctioned by the Society, but ordered by the Secretary from a native for less than he could afford to provide them for, the consequence is, that they still remain unfinished.* This is an instance of the ill effects of leaving the Curator dependant on the Secretary, or any one else, for things on which his own work depends; and as the circumstance is brought forward rather unfairly in the report of the Committee, I must be permitted to say, that had any member of that body required an *easy chair*, we may presume he would have obtained it at once, from the best cabinet maker, cost what it might.

14. There is but one name attached to the report which can be at all held responsible in a scientific point of view for the sentiments embodied in it, and although Dr. WALLICH may fairly be exonerated as any great authority on the subject of Museums, yet his own experience ought to have suggested the difficulty of making monthly reports on subjects connected with Natural History, he himself finding a single report too much to accomplish in the five years, that have now elapsed since his return from Assam.

15. From what has taken place on this subject, I have been induced to refer to the rules of various Societies and Museums, in hopes of finding some rules laid down for the duties of Curators. You will doubtless be very much surprised to learn, that though in all cases the duties of Presidents, Vice-Presidents, and Secretaries are strictly laid down in bye-laws, yet Curators alone appear to be the only officers who are left altogether to conduct their duties according to the best of their judgment and acquirements. Were they not the chief authority in all things on which the advancement, arrangement, and preservation of collections of Natural History depend, how could they be held responsible for their charge?

16. The antiquities may be safely left, as far as their "preservation" is concerned, to the "honorary services of the oriental secretary, the librarian, and pundits," but the natural history and geological departments must be left to a naturalist and geologist, for whose services the Society can have no security beyond his own reputation. Nothing could show the necessity of this more than the present attempt to reduce the Curator from that honorable and independent station which he fills in civilized countries, to a state of dependence on the caprice of Committees.

I have the honor to be,

Gentlemen,

Your most obedient servant,

J. M'CLELLAND.

28th Feb. 1840.

* Here Dr. M'Clelland is in ignorance of the facts, and consequently makes erroneous statements.—Eds.

The reading of Dr. M'Clelland's letter occasioned much amusement, and called forth some very pointed remarks from the President, Sir Edward Ryan; the Honorable Messrs. H. T. Prinsep and Wilberforce Bird; Mr. Torrens, and others. Messrs. Curnin and Bagshaw suggested that the consideration of the Report be postponed to the next Meeting, but both these gentlemen at the same time disclaimed any defence of the terms and tone of Dr. M'Clelland's letter.

It was then moved by Mr. Bird, seconded by Mr. Piddington, and carried with but *two* dissentient voices, that the report be adopted, and that the Committee of Papers be empowered to act on the views it contains.*

* We are in possession of accurate reports of the observations made by the speakers on this occasion. We refrain from their insertion from motives which, in all probability, will be thoroughly mistaken by Dr. M'Clelland and his friends.—EDS.

Day of the Month.	Moon's Phases.	Minimum Temperature observed at sun-rise.					Maximum Pressure observed at 9 a. m.					Observations made at Apparent Noon.				
		Temperature.				Wind.	Temperature.				Wind.	Temperature.				Aspect of the sky.
		Barometer.	Of the Mercury.	Of the Air.	Of an Evaporating Surface.		Barometer.	Of the Mercury.	Of the Air.	Of an Evaporating Surface.		Barometer.	Of the Mercury.	Of the Air.	Of an Evaporating Surface.	
1		30,000	66.8	60.0	59.5	Calm.	040	73.0	74.1	70.0	N. ..	021	74.5	74.7	70.3	N. W. Clear.
2		018	67.7	61.5	60.8	Calm.	056	72.0	76.0	70.0	N. ..	020	73.0	81.8	70.6	e. b. n. Clear.
3	●	021	68.0	65.0	61.0	Calm.	056	69.8	73.0	64.8	N. ..	012	72.2	80.0	69.9	N. .. Clear.
4		29,998	64.5	58.0	57.9	Calm.	038	70.5	76.8	68.5	e. b. n.	021	74.2	81.4	70.0	wnwbw Clear.
5		972	68.8	63.0	63.5	Calm.	000	71.6	74.0	72.0	N. ..	29,989	73.0	72.2	74.1	N. .. Cloudy and misty.
6		960	69.5	64.0	63.9	Calm.	004	72.1	73.8	73.0	W. ..	900	74.0	77.5	73.9	W. .. Cumulo-strati.
7		892	72.5	69.2	70.0	Calm.	29,940	74.0	78.1	75.8	W. ..	918	74.9	81.4	77.2	W. .. Cumuli detached (sunshine occasionally)
8		917	73.0	70.5	71.0	N. E.	992	74.5	81.0	75.2	N. E.	900	80.0	85.0	74.9	N. E. Clear.
9		30,068	71.5	65.2	63.0	N. E.	30,099	72.2	75.9	73.5	N. ..	30,069	73.9	78.2	73.8	w. b. n. Clear.
10	)	046	71.3	63.9	61.2	Calm.	080	72.2	72.2	66.5	N. ..	060	73.6	79.0	69.5	N. E. Cloudy, Cirro Cumuli.
11		000	60.9	62.0	62.0	N. E.	056	71.9	75.0	69.5	N. E.	050	74.5	78.3	70.0	N. W. Cloudy, Light sunshine.
12		29,996	71.2	63.0	62.9	Calm.	049	73.0	79.0	71.5	N. ..	036	75.4	83.1	74.0	w. b. n. Generally Clear.
13		980	70.5	64.0	63.0	Calm.	022	73.2	81.0	72.9	enebe.	007	75.5	81.0	73.0	W. .. Generally Clear.
14		920	70.6	63.9	63.0	Calm.	29,956	73.6	81.5	74.9	N. E.	29,940	76.5	85.0	75.1	N. W. Clear.
15		895	72.6	70.5	71.9	Calm.	938	76.4	80.0	75.9	s. h. w.	918	80.8	85.9	77.2	S. W. Clear.
16		870	72.8	70.0	70.7	Calm.	902	75.8	80.2	75.3	S. W.	888	78.8	85.0	76.8	w. b. s. Generally Clear.
17	○	907	72.7	69.0	68.0	Calm.	920	79.0	83.0	78.5	S. ..	950	79.9	84.2	79.0	S. .. A few scattered Clouds.
18		924	72.5	65.0	63.0	Calm.	960	76.2	77.1	75.0	N. W.	950	79.0	87.0	74.0	N. W. Clear.
19		954	72.9	61.0	61.0	Calm.	30,020	77.0	82.8	72.0	N. W.	30,000	78.9	83.5	73.2	N. W. Clear.
20		941	73.0	62.5	62.0	Calm.	29,982	76.2	78.8	69.5	N. W.	29,910	79.7	81.0	71.0	W. .. Clear.
21		980	73.5	62.8	61.5	Calm.	30,050	74.9	81.0	69.5	N. ..	30,044	76.6	86.2	73.9	N. W. Clear.
22		30,000	72.9	66.0	65.5	Calm.	042	73.7	80.0	70.9	N. W.	040	75.9	85.2	72.9	N. W. Clear.
23		100	72.5	61.2	62.5	Calm.	062	74.0	78.2	70.0	W. ..	041	74.8	79.8	72.0	N. W. Clear.
24		016	74.2	69.0	69.0	Calm.	070	76.2	79.5	75.7	W. ..	053	78.2	84.9	78.9	W. .. Clear.
25	(.....
26	
27		050	80.8	86.0	87.0	S.	022	81.7	90.0	76.3	W. .. Clear.
28		29,978	73.0	67.2	67.2	Calm.	044	78.8	86.2	73.8	N. W.	038	80.0	90.9	78.9	N. W. Clear.
29		952	74.2	69.9	69.5	Calm.	006	78.3	83.0	77.0	W. ..	29,992	80.4	89.5	77.0	W. .. Clear.
Mean.		29,970	71.3	64.6	61.9		020	74.5	78.8	72.9		001	76.7	83.0	74.0	

Day of the Month.	Maximum Temperature observed at 2 p. m.					Minimum Pressure, observed at 4 p. m.					Observations made at Sun-set.					Rain Gauge.	
	Temperature.				Wind.	Temperature.				Wind.	Temperature.				Aspect of the sky.	Upper.	Lower.
	Barometer.	Of the Mercury.	Of the Air.	Of an Evaporating Surface.		Barometer.	Of the Mercury.	Of the Air.	Of an Evaporating Surface.		Barometer.	Of the Mercury.	Of the Air.	Of an Evaporating Surface.			
1	950	76.0	77.0	71.2	102.0	N. ..	932	75.5	76.5	71.0	N. W.	910	74.8	72.8	65.9	Calm.	Clear.
2	959	73.8	83.3	72.5	101.1	N. ..	930	73.3	82.8	72.2	N. ..	930	73.0	74.0	67.0	Calm.	Clear.
3	980	73.7	81.0	70.5	97.5	N. W.	960	73.9	80.0	69.5	N. W.	960	73.5	75.1	67.5	Calm.	Clear.
4	932	73.2	85.0	71.2	108.0	W. b. n.	930	73.3	84.2	71.0	wnwbw	938	73.0	76.2	68.0	Calm.	Clear.
5	950	74.0	84.1	75.1	100.5	W. b. n.	930	74.0	82.9	75.0	N. W.	910	73.2	76.0	69.5	Calm.	Cirro Strati.
6	910	76.5	89.9	77.8	109.9	W. ..	900	76.2	84.9	77.5	W. ..	908	74.2	77.9	70.0	Calm.	Cumulo strati on the Hor.
7	830	76.0	89.1	79.2	.....	N. W.	842	75.6	83.5	77.9	W. ..	851	71.0	77.2	71.2	Calm.	To the S. & S. E. Cumulo
8	958	80.0	86.6	76.5	100.0	N. E.	948	78.0	84.6	75.5	N. ..	956	75.5	81.2	74.9	Calm.	[str. lightning.]
9	30,020	75.8	83.9	75.0	104.6	N. ..	985	75.6	83.0	74.8	N. ..	991	74.2	79.0	73.5	Calm.	Clear.
10	000	74.8	78.8	70.8	101.0	N. W.	980	74.6	78.0	70.1	N. W.	989	74.5	74.5	69.5	Calm.	Cirro-Strati. [clear.]
11	29,918	76.9	81.9	75.0	101.0	N. ..	948	76.0	81.0	73.0	N. W.	976	74.9	77.2	71.4	Calm.	Cirro-str. interspd. zen.
12	966	76.5	85.3	77.0	110.0	N. ..	953	77.0	86.0	78.8	N. ..	961	75.2	80.2	73.5	Calm.	Scattered clouds zen. clear.
13	950	76.4	82.3	76.2	104.0	W. ..	936	76.9	84.2	77.5	W. ..	941	74.9	78.5	73.0	Calm.	Clear.
14	880	79.3	86.9	77.9	105.9	W. ..	860	79.0	85.8	76.8	W. ..	874	75.2	81.0	77.5	Calm.	Clear.
15	865	81.5	90.0	79.5	111.0	S. W.	842	79.9	87.5	79.0	S. W.	851	77.0	81.0	75.0	S.	Cirro-Strati.
16	810	80.5	89.2	77.5	109.2	S. W.	820	79.0	88.8	77.2	w. b. s.	829	76.8	80.9	76.7	Calm.	Clear.
17	904	80.5	86.5	78.9	106.5	S. W.	880	79.5	83.9	79.9	w. b. s.	894	77.5	85.0	79.5	S.	Cirro-Strati.
18	900	81.0	90.0	75.6	108.0	N. W.	885	80.5	89.8	74.5	N. W.	890	78.2	82.1	73.5	Calm.	Clear.
19	924	80.0	87.0	75.0	109.2	N. W.	889	79.5	86.3	74.7	N. W.	891	76.5	81.5	72.8	Calm.	Clear.
20	910	79.5	87.0	73.2	109.5	N. W.	892	78.2	86.3	72.7	w. b. n.	900	75.9	82.2	72.0	Calm.	Clear.
21	969	78.0	88.0	74.2	111.0	N. W.	911	77.5	87.2	74.5	N. W.	950	76.5	80.0	70.0	Calm.	Clear.
22	30,000	77.8	87.5	73.5	109.2	N. W.	962	77.5	86.8	73.0	N. W.	974	76.0	80.5	70.1	Calm.	Clear.
23	014	76.5	81.4	72.8	108.5	W. ..	974	77.0	83.5	72.5	N. W.	982	75.9	82.8	70.0	Calm.	Clear.
24	29,982	80.4	91.2	80.0	109.2	W. ..	960	80.0	88.2	79.5	W. ..	968	78.5	83.7	74.2	Calm.	Clear.
25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
26	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
27	912	83.3	92.7	78.0	114.2	W. ..	910	82.0	91.5	77.5	W. ..	929	80.5	86.0	79.0	Calm.	Clear.
28	941	81.3	94.5	81.0	120.0	N. W.	914	81.9	93.9	82.0	s. b. w.	920	81.0	87.5	81.2	Calm.	Clear.
29	942	82.8	92.2	77.0	116.0	w. b. s.	910	82.0	91.7	77.5	S. W.	919	81.2	82.5	76.5	Calm.	Clear.
Mean.	911	78.1	86.3	73.6	101.8		915	77.5	85.4	75.4		929	76.2	80.3	73.0		



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